Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

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NMED Hazardous Waste Bureau

Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved Waste Stream Profile Form NTS54332R0 by the Central Characterization Project at Nevada Test Site

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Waste Stream Profile Form NTS54332R0 by the Central Characterization Project at Nevada Test Site. Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

Kerry W. Watson
CBFO Assistant Manager
Office of National TRU Program

Enclosure

cc: w/o enclosure
J. Kieling, NMED
C. Walker, TechLaw
J. Bennett, WTS
P. Roush, WTS
L. Greene, WRES
S. Calvert, CTAC
CBFO M&RC

CBFO:NTP:KWW:VW:03-2220:UFC:5822

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Attachment 2B - Waste Stream Profile Form

(1) Waste Stream Profile Number:	NTS54332R0		
(2) Generator site name:	Nevada Test Site	(3)Technical contact:	Courtland Fesmire
(3) Generator site EPA ID:	NV380090001	(3) Technical contact phone number: 505-234-7548	
(4) Date of audit report approval by NMED: February 17, 2003			
(4) Title, version number, and date of documents used for WAP Certification: CCP-PO-001, Rev 5, CCP Transuranic Waste Characterization Quality Assurance Project Plan, February 5, 2003 CCP-PO-002, Rev 5, CCP Transuranic Waste Certification Plan, February 12, 2003 CCP-PO-009, Rev 5, CCP NTS Interface Document, October 25, 2002 CCP-AK-NTS-001, Central Characterization Project Acceptable Knowledge Summary Report For NEVADA TEST SITE LAWRENCE LIVERMORE LABORATORY WASTE, January 6, 2003			
Did your facility generate this waste? ☐ Yes ☒ No		(5) If no, provide the name and EPA ID of the original generator: Lawrence Livermore National Laboratory CA2890012584	
Waste Stream Information[1]			
(6) WIPP ID: NTLLNL-S5400-332		(7) Summary Category Group: S5000	
(8) Waste Matrix Code Group: S5400 Heterogeneous Debris		(9) Waste Stream Name: Heterogeneous Debris from Building 332 at Lawrence Livermore National Laboratory	
(10) Description from the TWBIR: NT-W021			
(11) Defense TRU Waste: ☒ Yes ☐No		(11) Check One:	☒CH ☐ RH
(11) Number of SWBs 1-non-standard steel box	(11) Number of Drums 1392 55 gallon + 1 85 gallon	(11) Number of Canisters 0	
(12) Batch Data report numbers supporting this waste stream characterization: See Attachment 3 Table 1 of the Characterization Information Summary (CIS)			
(13) List applicable EPA Hazardous Waste Codes:[2] D004, D005, D006, D007, D008, D009, D010, D011, D019, D022, D027,D028, D029, D040, F001, F002, F003, F004 and F005			
(14) Applicable TRUCON Content Codes: NT225B, NT125A, NT125B, NT225A,			
Acceptable Knowledge Information[1]			
[For the following, enter supporting the documentation used (i.e., references and dates)]			
Required Program Information			
(15) Map of site: CCP-AK-NTS-001, January 6, 2003, Figures 4-1, 4-2, 4-4 and 4-5			
(15) Facility mission description: CCP-AK-NTS-001, January 6, 2003, Section 4.1.4			
(15) Description of operations that generate waste: CCP-AK-NTS-001, January 6, 2003, Section 4.3 and Table 4-1			
(15) Waste identification/categorization schemes: CCP-AK-NTS-001, January 6, 2003, Section 4.4			
(15) Types and quantities of waste generated: CCP-AK-NTS-001, January 6, 2003, Section 6.0, 6.2, and 6.4			
(15) Correlation of waste streams generated from the same building and process, as appropriate: CCP-AK-NTS-001, January 6, 2003, Section 4.2.2 and Table 4-1			
(15) Waste certification procedures: **CCP-PO-001, Rev 5, CCP Transuranic Waste Characterization Quality Assurance Project Plan, February 5, 2003** **CCP-PO-002, Rev 5, CCP Transuranic Waste Certification Plan, February 12, 2003** **CCP-TP-002, Rev 12, CCP Reconciliation of DQOs and Reporting Characterization Data, April 30, 2003** **CCP-TP-003, Rev 12, CCP Sampling Design and Data Analysis for RCRA Characterization, January 25, 2003** **CCP-TP-005, Rev 12, CCP Acceptable Knowledge Documentation, March 26, 2003** **CCP-TP-030, Rev 8,CCP WWIS Data Entry and TRU Waste Certification, March 26, 2003t**			

Attachment 2B – Waste Stream Profile Form (continued)

Required Waste Stream Information	
(16) Area(s) and building(s) from which the waste stream was generated: CCP-AK-NTS-001, January 6, 2003, Section 6.1 and Figure 6-1	
(16) Waste stream volume and time period of generation: CCP-AK-NTS-001, January 6, 2003, Section 6.2	
(16) Waste generating process description for each building: CCP-AK-NTS-001, January 6, 2003, Section 6.3	
(16) Process flow diagrams: CCP-AK-NTS-001, January 6, 2003, Figure 4-3	
(16) Material inputs or other information identifying chemical/radionuclide content and physical waste form: Process flow diagrams are not available for the R and D activities at LLNL. However, a material flow diagram is presented in CCP-AK-NTS-001, Figure 6-2. In addition tables of waste material sources and definitions are provided in CCP-AK-NTS-001, Table 6-1 (waste items), Table 6-3 (F-listed compounds) and Table 6-4 (metals).	
Which Defense Activity generated the waste: (check one)	
☐ Weapons activities including defense inertial confinement fusion	☐ Naval Rectors development
☐ Verification and control technology	☒ Defense research and development
☐ Defense nuclear waste and material by products management	☐ Defense nuclear material production
☐ Defense nuclear waste and materials security and safeguards and security investigations	
Supplemental Documentation	
(17) Process design documents: none compiled (LIST OF SOURCE DOCUMENTS ATTACHED)	
(17) Standard operating procedures: P007L, P008L, P009L, P010L, P011L, P012L, P018L, P019L, P020L, P021L P045L, P046L, P048L, P050L, P051L, P063L, P064L, P065L, P066L, P077L, P079L, P080L, P081L, P082L, P083L, P084L, P087L, P089L, P090L, P095L, P096L, P097L, U008L, U012L, U025L, U034L, U035L, U036L, U037L, U038L, U046L, C116L, P038L, P039L, P022L, P043L, P044L	
(17) Safety Analysis Reports: P045L, P046L, P088L	
(17) Waste packaging logs: P055L, U029L, U051L	
(17) Test plans/research project reports: P052L, P053L, P054L, P056L, P057L, P058L	
(17) Site databases: P024L, P025L, U003L, U016L, U019L, U024L, U051L U052L	
(17) Information from site personnel: C096L, C100L, C105L, C107L, C108L, C110L, C112L, C095L, C097L, C098L, C099L, C114L, C032L, C033L, C034L, C035L, C036L, C037L, C039L, C040L, C041L, C044L, C045L, C046L, C047L, C049L, C050L, C051L, C055L, C053L, C058L, C059L, C060L, C061L, C062L, C063L, C064L, C067L, C069L, C070L, C043L, C072L, C074L, C073L, C075L, C076L, C077L, C086L, C090L, C091L, C092L, C093L, C094L, C003L, C004L, C005L, C006L, C007L, C008L, C009L, C010L, C012L, C013L, C014L, C015L, C016L, C017L, C019L, C020L, C021L, C022L, C023L, C024L, C026L, C027L, C028L, C029L, C030L, C031L, C001L, C128L	
(17) Standard industry documents: P030L, P031L, P033L, P034L, P035L, P049L, P061L, C113L	
(17) Previous analytical data: P024L, P049L, C084L,U052L, U053L, U056L	
(17) Standard industry documents: P030L, P031L, P033L, P034L, P035L, P049L, P061L, C113L	
(17) Material safety data sheets: P062L, C062L	
(17) Sampling and analysis data from comparable/surrogate Waste: none compiled	
(17) Laboratory notebooks: U017L	
(17) Sampling and Analysis Information[4]	
For the following, when applicable, enter procedure title(s), number(s) and date(s)	
	(18) Radiography: CCP-TP045, Rev 6, CCP RTR #5 Radiography Inspection Operating Procedures, January 31, 2003
	(18) Visual Examination: CCP-TP-061, Rev 4, CCP TRU Waste Visual Examination, Segregation and Repacking, May 21, 2002
	Headspace Gas Analysis
	(19) VOCs: CCP-TP-007, Rev 16, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, February 3, 2003 CCP-TP-009, Rev 11, CCP Single Sample Manifold Data Handling Procedure, February 5, 2003 CCP-TP-029, Rev 11, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, February 12, 2003 CCP-TP-032, Rev 10, CCP Single Sample Manifold Data Validation Procedure, February 3, 2003

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Attachment 2B – Waste Stream Profile Form (continued)

	(19) Flammable: CCP-TP-007, Rev 16, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, February 3, 2003 CCP-TP-009, Rev 11, CCP Single Sample Manifold Data Handling Procedure, February 5, 2003 CCP-TP-029, Rev 11, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, February 12, 2003 CCP-TP-032, Rev 10, CCP Single Sample Manifold Data Validation Procedure, February 3, 2003
	(19) Other gases (specify): N/A
	Homogeneous Solids/Soils/Gravel Sample Analysis
	(20) Total metals: N/A (not analyzing homogenous solids in this waste stream)
	(20) PCBs: N/A (not analyzing homogenous solids in this waste stream)
	(20) VOCs: N/A (not analyzing homogenous solids in this waste stream)
	(20) Nonhalogenated VOCs: N/A (not analyzing homogenous solids in this waste stream)
	(20) Semi-VOCs: N/A (not analyzing homogenous solids in this waste stream)
	(20) Other (specify): N/A (not analyzing homogenous solids in this waste stream)

Waste Stream Profile Form Certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

(21) _____ Courtland Fesmire, P.E. 15 MAY 03

Signature of Site Project Manager	Printed Name	Date

NOTE: (1) Use back of sheet or continuation sheets, if required.
(2) If radiography, visual examination, headspace gas analysis, and/or homogeneous solids/soils/gravel sample analysis were used to determine EPA Hazardous Waste Codes, attach signed Characterization Information Summary documenting this determination.

Overview

The NTS stores CH-TRU waste that was generated at LLNL. The LLNL facility mission was to conduct research on nuclear weapons fabrication and materials research. Building 332 (the Plutonium Facility) provided a local capability for the safe handling and storage of plutonium in the quantities required for nuclear weapons Research and Development (R & D), including weapons component subassembly fabrication.

This summation of the AK Summary Report includes information to support Waste Stream Profile Form (WSPF) Number NTS54332R0 for Heterogeneous Debris Waste relating to the facility's history, configuration, equipment, process operations, and waste management practices. The Waste Stream Numbed associated with this waste is NTLLNL-S5400-332. Information contained in this summary was obtained from numerous sources, including facility safety basis documentation, historical document archives, generator and storage facility waste records and interviews with facility personnel, past and present. This summary is derived from "CCP-AK-NTS-001 Central Characterization Project Acceptable Knowledge Summary Report for NEVADA TEST SITE LAWRENCE LIVERMORE LABORATORY WASTE", Revision 5, dated January 6, 2003.

Waste Stream Identification Summary

Site Where TRU Waste Was Generated:	Lawrence Livermore National Laboratory
Site Where TRU Waste Is Currently Stored:	Nevada Test Site, Area 5
Waste Stream Name:	Heterogeneous Debris from Building 332
Waste Stream Number:	NTLLNL-S5400-332
Waste Stream Profile Form Number:	NTS54332R0
Dates of Waste Generation:	April 1975 – November 1989
Facility Where TRU Waste Was Generated:	LLNL Building 332
Waste Stream Volume:	291.59 m^3 1392 55-gallon drums; 1 85 gallon drum;
Summary Category Group:	S5000
Waste Stream TWBIR Identification:	NT-W001

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Waste Matrix Code Group:	Heterogeneous Debris
RCRA Hazardous Waste Codes:	D004, D005, D006, D007, D008, D009, D010, D011, D019, D022, D027, D028, D029, D040, F001,F002, F003, F004, F005
Waste Matrix Code:	S5400 – Heterogeneous Debris
TRUPACT-II Content Code (TRUCON):	NT125A, NT125B, NT225A, NT225B

Waste Stream Description

The waste consists of mixed glovebox bagout waste, nonline-generated laboratory trash, contaminated small equipment, and small quantities of solidified liquids and sludges. Solid combustible and noncombustible mixed glovebox bagout waste, derived from research activities performed in a laboratory environment. The waste includes soft plastics, rubber, cardboard, rags, paper, cloth, glass, and some contaminated small equipment. The waste also includes some small quantities of solidified liquids and sludges.

This waste stream is assigned the waste matrix code S5400 "Heterogeneous Debris" because the waste is not dominantly organic or inorganic as defined by the DOE Waste Treatability Group Guidance document. It has not been quantified that the waste stream is >80% inorganic (S5100) or organic (S5300) by volume.

Point of Generation

The LLNL Building 332 Plutonium Facility was constructed to support nuclear weapons Research and Development. Operations included testing of engineering assemblies containing plutonium and other fissile materials; development of advanced metallurgy, chemistry, and engineering techniques; and fundamental and applied plutonium research (CCP-AK-NTS-001). Within the building was a laboratory used for metallurgy, chemistry, and characterization of plutonium based metals.

Generating Processes

Description of Waste Generating Processes

The point of generation and process by which the waste stream was generated was from the Lawrence Livermore National Laboratory, Building 332, Plutonium Facility. The process by which the waste stream was generated is described in detail in CCP-AK-NTS-001, Section 4.3. The LLNL Building 332 Plutonium Facility was constructed to support nuclear weapons R and D. Operations

included testing of engineering assemblies containing plutonium and other fissile materials; development of advanced metallurgy, chemistry, and engineering techniques; and fundamental and applied plutonium research (CCP-AK-NTS-001). Within the building was a laboratory used for metallurgy, chemistry, and characterization of plutonium based metals. A foundry, machine shop, and assembly facilities were also located in the Radioactive Materials Area (RMA) of the building. In addition facilities to support laser isotope separation and chemical processing of plutonium were located in the building. Waste Items and Materials are tabulated in Table 6-1 of CCP-AK-NTS-001. Table 6-1 contains several items that are prohibited from certification and disposal at the WIPP. During the characterization process, the waste containers undergo 100% RTR to ensure that prohibited items are not included in the waste drums as specified in the operating procedures.

Many of the processes within the 332 building were classified and therefore classified materials resulting from these processes have been separated from the unclassified waste (CCP-AK-NTS-001, Section 6.3). This waste stream does not include classified materials.

Fabrication

Several rooms in Building 332 fabricated fission-stage subassemblies from piece-part blanks, applied engineering measurement instrumentation and conducted limited nondestructive tests on subassemblies. These areas were also equipped to perform post-test activities.

Room 1345 of Building 332 contained a series of enclosures where subassemblies were fabricated and evaluated. This room contained two gloveboxes for contamination control during assembly and disassembly. Other test instrumentation was also located in this room.

Additional assembly operations were conducted in room 1353, where TCE was used for degreasing. Also in this room was a vapor-plating unit capable of metal deposition, furnace brazing or electron beam welding. Assembly and disassembly of radiation experiments was conducted in rooms 1345 and 1353. These experiments used lithium-6 hydride, lithium-6 deuteride, beryllium and plutonium. Density determinations of plutonium and uranium parts used an immersion technique. Actinide parts and assemblies were immersed in FC-43. Gleem glass cleaner (aerosol) was used for cleaning glove box interiors.

Room 1362 was used for machining and parts inspection. Beryllium was also machined in room 1362. TCE was used during machining as a coolant on a mill and a lathe. TCE was used for cleaning equipment. 1,1,1-Trichloroethane was used as a replacement for TCE during the mid 1980's. In room 1362, Isopropyl alcohol and Freon were used for cleaning parts and gauges respectively. Swish was used to clean glove box interiors. Isopropyl alcohol was used to clean parts and Freon (aerosol) was used to clean glove box interiors.

In room 1369, actinide parts and assemblies were immersed in FC-43. Room 1361 was used for welding, brazing, soldering and machining of plutonium. In room 1354, components were welded. Soldering flux, silver solder, acetone, ethanol, methanol isopropyl alcohol and Radiacwash were used during welding operations.

A foundry located in room 1370 provided plutonium casting operations. Graphite molds were sprayed with a solution containing yttrium oxide. After the metal was cast, it was loaded into tantalum crucibles with gallium tracer elements including isotopes of Am-241, Cm-244, and Np-237. Swish was used to clean glovebox interiors.

Waste Materials Processing

In Building 332, waste and materials processing included plutonium recovery, waste solidification, pyrochemical processing and atomic vapor laser isotope separation (AVLIS). Various operations generated scrap plutonium that were prepared and shipped to other DOE sites for final plutonium recovery. Uranium-233 and Uranium- 235 were also processed in this building. Liquids containing plutonium in concentrations exceeding the discard limits were processed to precipitate plutonium, using sodium hydroxide, which was ultimately ashed with other debris and sent off site. The precipitate was washed with chloroform. Liquids (which could contain oil and TCE) containing less than permissible discard limits of plutonium were solidified using either Envirostone emulsifier and cement or Portland cement.

Plutonium metal and alloy chips were degreased and oxidized in a static inert gas glove box. Pyrochemical processing was also performed by direct oxide reduction, molten salt extraction or hydriding/dehydriding operations. Various solvents including Swish, Freon, Radiacwash, and other commercial products were used in these processes. Spent salts and calcium metal were kept separate from other wastes.

The AVLIS process used dry lubricant containing molybdenum and graphite. Ethyl, methyl, or isopropyl alcohol, acetone and Swish were used for cleaning the glovebox used for the process.

Laboratories

Several laboratories supported operations in building 332. These laboratories included chemical, x-ray, and metallographic characterization of actinide metals and other radioactive material contaminants. Several methods were used to prepare samples including electropolishing, rough grinding, etching, dissolving, fuming, ion exchange, organic extraction, fusion, and distillation. Many

corrosive, flammable and toxic chemicals were used for these methods. These chemicals included most mineral acids, bases and salts. The following chemicals were specifically identified as used in the laboratories in Building 332:

Chemicals Identified in Building 332

Acetone	Benzene	Chloroform
Ethanol	Freon	Hydrochloric acid
Hydrofluoric acid	Isopropyl alcohol	Magnesium perchlorate
Methanol	Methyl ethyl ketone	Nitric acid
Potassium carbonate	Potassium hydroxide	Sodium bicarbonate
Sodium hydroxide	Sodium chloride	Sulfuric acid
Toluene	Trichloroethylene	Carbon tetrachloride
Chromium trioxide	Diamond paste	Ethylene glycol
Kerosene	Lactic acid	Mineral oil
Phosphoric acid	Silicone oil	Petroleum ether

Laser dyes were also used for materials characterization that may have used a variety of solvents for dye makeup.

Materials Testing and Development

Numerous techniques were used to determine the physical and mechanical properties of plutonium, plutonium alloys, uranium and other metals when subjected to various conditions. Materials were subjected to tension, torsion, and compression tests at ambient and elevated temperatures. Resistivity and stress tests were conducted on molten and heated metals. Furnaces used for these tests were cleaned with ethanol and tubes were immersed in silicone-based quenching oil. Non-flammable solvent such as Freon were also used to clean equipment used for electron beam evaporation and sputtering. Hydrochloric acid was used to etch parts. Freon and acetone was used to clean parts. Ethanol and Gleme cleaner (aerosol) were used to clean glove boxes.

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Location

All waste from this waste stream was generated from Building 332 at LLNL. Waste was shipped from Lawrence Livermore to the Nevada Test Site (NTS) from 1974 to 1990. The waste is currently stored at NTS, Waste Management Area 5, building number 5-24, the TRU Pad Cover Building. An ongoing repackaging effort has been underway since 1997. Repackaging takes place in the Visual Examination and Repack Building (VERB). Activities to characterize the waste for shipment to WIPP (non-destructive assay, non-destructive examination, and head space gas sampling) took place in Area 5 near the VERB. Visual Examination took place in the VERB.

RCRA Determinations

Hazardous Waste Determinations

Waste generated in Building 332 does not qualify for any of the exclusions outlined in 40 CFR 260 or 261.

Ignitability

Ignitables are absent from the waste stream generated from Building 332. The waste does not meet the definition of ignitability as defined in 40 CFR 261.21. To further ensure that the waste does not exhibit the characteristic for ignitability, each waste container is processed through RTR and/or VE. Any free liquids (regardless of quantity) and compressed flammable gases are removed as prohibited items. Some chemicals described below to which the F003 hazardous waste code is applied, were used. The F003 code is applied to the waste streams because the solvents were used even though the characteristic is for ignitability. However, as no liquids were allowed in the waste stream, the F-listed chemicals do not exist as liquids and therefore are not ignitable.

The ignitability characteristic (D001) does not apply to the waste.

Corrosivity

Sodium and potassium hydroxides and hydrofluoric, nitric, phosphoric, and sulfuric acids were used in Building 332. However, free liquids when found by radiography or VE are removed ensuring that these materials are not present in NTS waste shipped to WIPP. As no liquids are allowed in the waste stream, the corrosivity characteristic (D002) does not apply to the waste.

Reactivity

The reactive materials described below were used in Building 332.

Calcium was used in various processes in Building 332, including the direct oxide reduction process. In this process, calcium was oxidized to calcium oxide and chloride salts. These salts may be present in the waste as a result of the direct oxide reduction process. Other calcium was burned before bag out and disposal. Therefore, it is not present in a form that is hazardous or requires treatment.

Magnesium was burned or calcined prior to disposal. Plutonium hydride could be present as a trace contaminant in the TRU waste generated from the glovebox 1023 in Building 332; however, it is not present in sufficient quantities to be reactive.

Lithium-6 hydride and lithium-6 deuteride were used in intrinsic radiation experiments in Building 332. Experimenters described this as a high temperature reaction of either Lithium-6 hydride or lithium-6 deuteride with Plutonium oxide which produced Lithium oxide and Plutonium metal. According to Sax's Dangerous Properties of Industrial Materials, "The nonvolatile hydrides (such as sodium, lithium and calcium) readily liberate hydrogen when heated or on contact with moisture or acids . . . When heated or on contact with moisture or acids, an exothermic reaction evolving hydrogen occurs . . ." In this process, in the presence of PuO_2, Lithium oxide was produced. According to the experimenters, the lithium oxide was reduced to Lithium metal and then reused, and therefore is not present in the TRU waste.

The waste materials in this waste stream are stable and will not react violently with water, form potentially explosive mixtures with water or generate toxic gases, vapors or fumes when mixed with water. The materials found in the waste stream do not contain cyanides or sulfides and are not capable of detonation or explosive reaction. Further, this waste does not present a compatibility hazard due to the chemicals identified with each other or with the packaging of the waste.

To further ensure that the waste does not exhibit the characteristic for reactivity, compressed gases, including non-punctured aerosol cans are managed as prohibited items when identified by radiography and/or VE. The presence of these items causes the drum to be rejected or the items to be removed during the VE process. Therefore, these items are not in the waste. The waste code for reactivity (D003) does not apply to the waste.

Toxicity

The waste in this waste stream meets the definition of toxicity as defined in 40 CFR 261. 24. The toxicity characteristic contaminants fall into two categories: metals and organics. Organic compounds include halogenated and nonhalogenated solvents, pesticides and other toxic compounds.

Arsenic (D004)

Arsenic was listed in one source document as potentially present in LLNL TRU waste. It was also a component of "Arsenazo," a trade-named chemical product listed in a Building 332 chemical tracking database. Based on this information, the D004 hazardous waste number has been conservatively assigned to this waste stream.

Barium (D005)

Barium was listed in some source documents that provide general information about potential contaminants at LLNL, including its presence in excess of the toxicity characteristic regulatory level in leaded gloves and glovebox windows, which are known to be in TRU waste containers. Barium was also listed in a 1968 building chemical inventory. Based on this information, the D005 hazardous waste number has been conservatively assigned to this waste stream.

Cadmium (D006)

Cadmium was listed in some source documents that provide general information about potential contaminants at LLNL. In addition, D006 was specifically listed as a potential contaminant for Building 332 TRU waste. Cadmium may be present in Building 332 TRU waste based on the following documentation: it was listed as being present in Room 1354 TRU waste; and it was listed in a 1968 building chemical inventory. Based on this information, the D006 hazardous waste number has been assigned to this waste stream.

Chromium (D007)

Chromium was listed in several source documents that provide general information about potential contaminants at LLNL. Of greater relevance, the D007 hazardous waste number was specifically listed as a potential contaminant for Building 332 TRU waste. The following uses or presence/absence information for chromium in Building 332 TRU waste was described by source documentation: in gloveboxes in water or dilute acid and in chemical standards with concentrations 1-10 parts per million (ppm); in plastic vials in Room 1321; in a 1968 building chemical inventory; used in the Pyroredox refining process; and listed for Rooms 1322 and 1330A as chromium trioxide in a 1976 inventory. Based on this information, the D007 hazardous waste number has been assigned to this waste stream.

Lead (D008)

Lead was listed in some source documents that provide general information about potential contaminants at LLNL, including its use as shielding in some containers and presence in excess of the toxicity characteristic regulatory level in leaded

gloves and glovebox windows. D008 hazardous waste number was specifically listed as a potential contaminant for Building 332 TRU waste. Also, the following uses for lead and information on its presence in TRU waste were described by source documents: in leaded glovebox gloves or other leaded gloves; in gloveboxes in water or dilute acid and in chemical standards with concentrations 1-10 ppm; as bricks and gloves; in Room 1353 waste as lead bricks from decommissioning vapor plates, circa 1985; occasional disposal of lead "pigs" used to store sealed radioactive sources; listing in a 1968 building chemical inventory; as lead acetate and 24% lead napthenate in a chemical inventory; and used as shielding in some containers. Lead pigs and bricks were identified in some containers by LLNL RTR efforts. Circuit boards could also be in the waste, which may be expected to add some lead. Considering the multiple uses described for lead and the lack of information excluding lead or providing quantitative data to the contrary, the hazardous waste number, D008, will be assigned to this waste stream.

Mercury (D009)

Mercury was listed in some source documents that provide general information about potential contaminants at LLNL. More specifically, the D009 hazardous waste number was listed as a potential contaminant for Building 332 TRU waste. The following uses or presence/absence information for mercury in Building 332 TRU waste was described by source documentation: possibly in fluorescent light fixtures disposed as TRU waste; as mercury solution in a chemical inventory; and listed in a 1968 building chemical inventory. Based on this information, the D009 hazardous waste number has been assigned to this waste stream.

Selenium (D010)

Selenium was listed in one source document as being present in LLNL TRU waste. More specifically, the D010 hazardous waste number was specifically listed as a potential contaminant for Building 332 TRU waste and as metal powder in a building chemical inventory. Although no information is available describing how selenium may have been used, without quantitative data precluding a hazardous waste number assignment, the hazardous waste number, D010, is applied to this waste stream.

Silver (D011)

Silver was listed in some source documents that provide general information about potential contaminants at LLNL. The D011 hazardous waste number was also specifically listed as a potential contaminant for Building 332 TRU waste and the following uses for silver in Building 332 and/or its possible presence in TRU waste was indicated: in Room 1354 as solder associated with soldering fluxes; listed in a 1968 building chemical inventory and a 1992 chemical inventory database query; and in Vault 1314A used during metal recovery and packaging of

solid. Circuit boards could also be in the waste, which may be expected to add some silver. Based on this information, the D011 hazardous waste number has been assigned to this waste stream.

Carbon tetrachloride was identified in the building chemical inventory. Carbon tetrachloride was used in the metallography laboratory as a lubricant. Although previous assignments of F001 as a spent solvent have been used for Carbon tetrachloride, lubrication does not constitute solvent use and metallography was the only process identified which used Carbon tetrachloride. Since there are no data indicating the definitive concentration of the compound EPA Hazardous waste number D019 has been assigned to the waste stream.

Chloroform was used as a reagent in the analytical laboratory and was also added to contaminated oil allowing it to pass through filter paper prior to being solidified. There are no data to indicate the concentration of this constituent in the waste stream. Therefore, EPA hazardous waste number D022 has been applied to the waste stream.

1,4-dichlorobenzene (D027), 1,2-dichloroethane (D028), 1,1-dichloroethylene (D029) and trichloroethylene (D040) were also identified in Building 332. Specific sources for these organic compounds have not been identified. However, these toxicity characteristic contaminants were identified in the documentation, however, there is no data to indicate the concentration of these constituents. Therefore, EPA hazardous waste numbers, D027, D028, D029 and D040 are applied to wastes generated from Building 332.

Pesticides and herbicides were not used in the 332 Building processes.

Listed Waste

The material in this waste stream was mixed with or derived from the treatment of a waste listed in 40 CFR 261, Subpart D as a hazardous waste from non-specific sources. Several information sources specify F001, F002, F003, F004 and F005-listed solvents being used or present in Building 332 or in the waste from the building. Therefore, EPA hazardous waste numbers F001, F002, F003, F004 and F005 are assigned to the wastes generated from Building 332. The following chemicals used in Building 332 require the application of the following F hazardous waste numbers to this waste stream. Additional information is available in Section 6.4.3[A] of the AK document.

(F001)
Carbon tetrachloride, Dichlorodifluoromethane, Freon, Methylene chloride, PCE/tetrachloroethylene, Trichloroethylene, 1,1,1-Trichloroethane

(F002)
Chlorobenzene, Freon, Methylene chloride, PCE/tetrachloroethylene, Trichloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane

(F003)
Acetone, n-Butanol, Cyclohexanone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl isobutyl ketone, Methanol, Xylene

(F004)
Nitrobenzene

(F005)
Benzene, Carbon disulfide, Isobutanol, Methyl ethyl ketone, Pyridine, and Toluene

The material in this waste stream is not hazardous waste from specific sources since it was not generated from any of the processes listed in 40 CFR 261.32 nor does it consist of discarded chemical products, off-specification compounds, container residues or spill residue listed in 40 CFR 261.33. The material in this waste stream is therefore not a K-listed waste or U- or P-listed.

The waste may exhibit the characteristic for toxicity for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, carbon tetrachloride, chlorobenzene, chloroform, 1,4-dichlorobenzene, nitrobenzene, pyridine, and tetrachloroethylene. The waste was mixed with or derived from the treatment of halogenated and nonhalogenated solvents, and is therefore F-listed. EPA hazardous waste numbers applicable to the waste are: D004, D005, D006, D007, D008, D009, D010, D011, D019, D022, D027, D028, D029, D040, F001, F002, F003, F004, and F005.

Polychlorinated Biphenyls

The presence of polychlorinated biphenyls (PCBs) in TRU waste generated at LLNL and stored at the NTS has been evaluated. PCBs were identified in LLNL waste. However, no direct evidence of PCB-contaminated TRU waste was identified. X-ray fluorescent equipment containing PCBs as coolant was disposed as low level waste. Within the last few years, transformers and lamp ballasts known to contain PCBs were disposed of as non-radioactive waste. To ensure waste generated prior to 1983 (when PCBs were segregated from the waste at LLNL) does not contain PCBs, transformers, capacitors, and lamp ballasts will be managed as prohibited items when identified by radiography or VE.

Physical Form

Wastes from this waste stream include paper, plastic, glassware, ceramics and metals, as well as solidified liquids or sludges. Specific waste items include: Kimwipes, cotton wipes, swabs, tissues, grinding paper, plastic labware and

glovebox windows, glass beakers, Neoprene and Hypalon gloves, hardware, tools and equipment, aluminum and lead foil, copper hardware, aerosol cans, graphite molds, magnesium oxide and tantalum crucibles, epoxy resin chunks, and solidified aqueous or organic liquids. Further information is available in Table 6-1 of CCP-AK-NTS-001, Revision 5.

The bulk physical and chemical forms of wastes generated in Building 332 have been determined based on TRU waste management practices, waste generation processes and previous radiography data to contain at least 50 volume % debris materials.

Prohibited Items

This waste stream undergoes 100% RTR. Visual examination is conducted as a quality control check of the RTR process. This process is used to determine that the containers do not include any prohibited items.

Headspace Gas/Volatile Organic Compound Information

Lot 1 of waste stream NTLLNL-S5400-332 consists of 41 55-gallon drums. Twenty-three tentatively identified compounds (TICs) were identified in Lot 1. These compounds are listed in the Headspace Gas Summary Report Attachment 4 and Attachment 5. None of these TICs were found in more than 25% of the containers in Lot 1A. None of the TICs are listed in Appendix VIII of 40 CFR Part 261. One chemical, Trichloroethylene, is incorrectly listed as a TIC. However, this chemical is part of the TAL.

The UCL_{90} calculated values of all of the Target Analytes are below the program required quantification limits (PRQLs). Specific information about the maximum, mean, standard deviation and UCL_{90} are contained in the Headspace Gas Summary Report.

Radionuclide Information

Weapons-grade plutonium was the primary radioactive material in Building 332 and was used in nearly every operation. Other grades of plutonium include fuel-grade, reactor-grade, mixed-grade and americium-enriched.

The expected isotopic composition of weapons-grade plutonium is:

Pu-238:	0.01 – 0.02 wt %
Pu-239:	93.2 – 94.1 wt %
Pu-240:	5.71 – 6.26 wt %
Pu-241:	0.10 – 0.40 wt %
Pu-242:	0.02 - 0.05 wt %
Am-241:	0.05 – 0.44 wt %
Np-237:	0.00 – 0.04 wt %

Other grades of plutonium that are present in the waste stream are delineated on a drum by drum basis and contain varying amounts of Pu-240. Reactor-grade plutonium contains > 12 wt % Pu-240 and ~1% Am-241. Americium-enriched plutonium contains < 15 wt % Pu-240 and 1 to 25 wt % Am-241. Mixed-grade plutonium contains 15 to 50 wt % Pu-240 and 1-25 wt %Am-241. Fuel grade plutonium contains 6-12 wt % Pu-240 and < 1% Am-241.

The radionuclides listed on the following Table (Radionuclides, page 13) have been identified as being present in Building 332 or in waste from the building and may be expected in the waste as indicated in Section 6.4.2 of the AK Summary Report.

The drums in this waste stream originated from Lawrence Livermore National Laboratory. The AK provided for these drums indicate that the maximum gram loading for beryllium in any one drum is 0.002 grams. Therefore, the total quantity of beryllium in any drum from this waste stream will not exceed 1%. No drum or 14 drum payload configuration will present a criticality issue with regards to beryllium.

Newly Generated Waste

This waste stream does not include any newly generated waste.

Hydrofluoric Acid

Hydrofluoric Acid is not applied to this waste stream.

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Radionuclides

Americium	241	243				
Antimony	125					
Berkelium	249					
Bismuth	212	213				
Californium	249	250	252			
Cesium	137					
Cobalt	56	60				
Curium	242	243	244	246	248	245
Europium	152	154	155			
Krypton	85					
Manganese	54					
Neptunium	237	239				
Plutonium	236	238	239	240	241	242
Thorium	228					
Strontium	90					
Uranium	232	233	234	235	238	
Thallium	208					
Tungsten	187					
Actinium	223	227				
Lead	212					
Palladium	Unknown isotope					
Sodium	22					
Radon	219					
Mixed fission products	Not specified					
Tritium	H-3					
Thorium	228					

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Source Doc No	Title	Author	Date	Date	Date	Date
C001L	TRU Waste Generator Sheet No. 91-3-13-1. Interview of Duane Straub	Kem Hainebach and Dan Hoyt			March 3, 1991	
C002L	TRU Waste Generator Interview Sheet No. 91-3-14-1. Interview of Robert Wikkerink and Jerry Landrum	Kem Hainebach and Dan Hoyt				
C003L	TRU Waste Generator Interview Sheet No. 91-3-14-2. Interview of Richard Burns	Kem Hainebach and Dan Hoyt			March 14, 1991	
C004L	TRU Waste Generator Interview Sheet No. 91-3-15-1. Interview of Jean Lindsey	Kem Hainebach and Dan Hoyt			March 15, 1991	
C005L	TRU Waste Generator Interview Sheet No. 91-3-15-2. Interview of Harold Clark	Kem Hainebach and Dan Hoyt			March 15, 1991	
C006L	Memorandum from Jeff Harrison to File. TRU Waste Generator Interview Sheet No. 91-3-18-1. Interview of Bob Gomez	Kem Hainebach and Bob Fischer			March 18, 1991	
C007L	TRU Waste Generator Interview Sheet No. 91-3-18-2. Interview of Peter Biltoft	Kem Hainebach and Dan Hoyt			March 18, 1991	
C008L	TRU Waste Generator Interview Sheet No. 91-3-18-3. Interview of Charles M. Peters	Kem Hainebach and Dan Hoyt			March 18, 1991	
C009L	TRU Waste Generator Interview Sheet No. 91-3-19-1. Interview of Ted Midtaune	Kem Hainebach, Bob Fischer and Dan Hoyt			March 19, 1991	
C010L	TRU Waste Generator Interview Sheet No. 91-3-20-1. Interview of Walter Wien	Kem Hainebach and Dan Hoyt			March 20, 1991	
C011L	TRU Waste Generator Interview Sheet No. 91-3-20-2.	Kem Hainebach and Dan Hoyt, LLNL			March 20, 1991	
C012L	TRU Waste Generator Interview Sheet No. 91-3-22-1. Interview of Joe Magana	Kem Hainebach and Dan Hoyt			March 22, 1991	
C013L	TRU Waste Generator Interview Sheet No. 91-3-22-2. Interview of Alice Conover	Kem Hainebach and Dan Hoyt			March 22, 1991	
C014L	TRU Waste Generator Interview Sheet No. 91-3-22-3. Interview of Bill Poulos	Kem Hainebach			March 22, 1991	
C015L	TRU Waste Generator Interview Sheet No. 91-3-26-1. Interview of Domenico Del Giudice	Kem Hainebach and Dan Hoyt			March 26, 1991	
C016L	TRU Waste Generator Interview Sheet No. 91-3-26-2. Interview of Frank Beckett	Kem Hainebach and Dan Hoyt			March 26, 1991	
C017L	TRU Waste Generator Interview Sheet No. 91-3-26-2. Interview of Dennis Barrett	Kem Hainebach and Dan Hoyt			March 27, 1991	
C018L	TRU Waste Generator Interview Sheet No. 91-3-27-2. Interview of John Loy conducted	Kem Hainebach and Dan Hoyt				
C019L	TRU Waste Generator Interview Sheet No. 91-3-28-1. Interview of Guy Armantrout	Kem Hainebach and Dan Hoyt			March 28, 1991	
C020L	Memorandum from Jeff Harrison to File. TRU Waste Generator Interview Sheet No. 91-3-28-2. Interview of Tom Crawford	Kem Hainebach and Dan Hoyt			March 28, 1991	
C021L	TRU Waste Generator Interview Sheet No. 91-3-28-3. Interview of Dave Fix	Kem Hainebach and Dan Hoyt			March 28, 1991	
C022L	TRU Waste Generator Interview Sheet No. 91-3-26-2. Interview of Bobby Vallier	Kem Hainebach and Dan Hoyt			March 28, 1991	

Source Doc. No.	Title	Author	Author 2	Author 3	Date	Publisher
C023L	TRU Waste Generator Interview Sheet No. 91-3-29-1. Interview of Kenton Moody	Kem Hainebach and Dan Hoyt				
C024L	TRU Waste Generator Interview Sheet No. 91-3-29-2. Interview of R. Gus Grogan	Kem Hainebach and Dan Hoyt			March 29, 1991	
C025L	TRU Waste Generator Interview Sheet No. 91-3-29-3. Interview of Austin Prindle	Kem Hainebach and Dan Hoyt				
C026L	TRU Waste Generator Interview Sheet No. 91-3-29-4. Interview of Terry Ludlow	Kem Hainebach and Dan Hoyt			March 29, 1991	
C027L	TRU Waste Generator Interview Sheet No. 91-3-29-5. Interview of Bob Douglas	Kem Hainebach and Dan Hoyt			March 29, 1991	
C028L	TRU Waste Generator Interview Sheet No. 91-4-1-1. Interview of Tony Echeverria	Kem Hainebach and Dan Hoyt			April 1, 1991	
C029L	TRU Waste Generator Interview Sheet No. 91-4-1-2. Interview of Tony Echeverria	Kem Hainebach and Dan Hoyt			April 1, 1991	
C030L	TRU Waste Generator Interview Sheet No. 91-4-1-3. Interview of Jim Lewis	Kem Hainebach and Dan Hoyt			April 1, 1991	
C031L	TRU Waste Generator Interview Sheet No 91-4-1-4 Interview of Sam Torres	Kem Hainebach and Dan Hoyt			April 1, 1991	
C032L	TRU Waste Generator Interview Sheet No. 91-4-1-5. Interview of W. E. Dickinson	Kem Hainebach and Dan Hoyt			April 1, 1991	
C033L	TRU Waste Generator Interview Sheet No. 91-4-1-6. Interview of Bob Gomez	Kem Hainebach			April 1, 1991	
C034L	TRU Waste Generator Interview Sheet No. 91-4-2-1. Interview of Jon Cunningham	Kem Hainebach and Dan Hoyt			April 2, 1991	
C035L	TRU Waste Generator Interview Sheet No. 91-4-2-2. Interview of Jim Furr	Kem Hainebach, Dan Hoyt			April 2, 1991	
C036L	TRU Waste Generator Interview Sheet No. 91-4-3-2. Interview of Susan Lombard	Kem Hainebach, Dan Hoyt			April 2, 1991	
C037L	TRU Waste Generator Interview Sheet No. 91-4-2-4. Interview of Trung Le	Kem Hainebach, Dan Hoyt			April 2, 1991	
C038L	TRU Waste Generator Interview Sheet No. 91-4-2-5. Interview of Ted Midtaune	Kem Hainebach			April 2, 1991	
C039L	TRU Waste Generator Interview Sheet No. 91-4-3-1. Interview of Joe Magana	Kem Hainebach			April 3, 1991	
C040L	TRU Waste Generator Interview Sheet No 91-4-3-2. Interview of Susan Lombard	Kem Hainebach, Dan Hoyt			April 3, 1991	
C041L	TRU Waste Generator Interview Sheet No. 91-4-3-3. Interview of Mark Thoet	Kem Hainebach, Dan Hoyt			April 3, 1991	
C042L	TRU Waste Generator Interview Sheet No. 91-4-3-4. Interview of Richard Sands	Kem Hainebach			April 3, 1991	
C043L	TRU Waste Generator Interview Sheet No. 91-4-3-5. Interview of Willis Haugen	Kem Hainebach, Dan Hoyt			April 3, 1991	
C044L	TRU Waste Generator Interview Sheet No. 91-4-3-6. Interview of Bill Morris	Kem Hainebach, Dan Hoyt			April 3, 1991	
C045L	TRU Waste Generator Interview Sheet No. 91-4-4-1. Interview of Bill Kuhl	Kem Hainebach, Dan Hoyt			April 4, 1991	

Source Doc No.	Title	Author	Volume	Revision	Date	Publisher
C046L	TRU Waste Generator Interview Sheet No. 91-4-4-2. Interview of Tom Schroeder	Kem Hainebach			April 4, 1991	
C047L	TRU Waste Generator Interview Sheet No. 91-4-4-3. Interview of Bobby Vallier	Kem Hainebach			April 4, 1991	
C048L	TRU Waste Generator Interview Sheet No. 91-4-4-4. Interview of Jim Harter	Kem Hainebach			April 4, 1991	
C049L	TRU Waste Generator Interview Sheet No. 91-4-4-5. Interview of Sharon Torres	Kem Hainebach			April 4, 1991	
C050L	TRU Waste Generator Interview Sheet No. 91-4-4-6. Interview of Gerald Roberts	Kem Hainebach			April 4, 1991	
C051L	TRU Waste Generator Interview Sheet No. 91-4-5-1. Interview of W. D. Barrowman	Kem Hainebach, Dan Hoyt			April 5, 1991	
C052L	TRU Waste Generator Interview Sheet No. 91-4-5-2. Interview of Chris Carlson	Kem Hainebach			April 5, 1991	
C053L	TRU Waste Generator Interview Sheet No. 91-4-5-3. Interview of Doug McAvoy	Kem Hainebach, Dan Hoyt			April 5, 1991	
C054L	TRU Waste Generator Interview Sheet No. 91-4-5-4. Interview of Jerry Landrum	Kem Hainebach			April 5, 1991	
C055L	TRU Waste Generator Interview Sheet No. 91-4-8-1. Interview of Sharon Schumacher and Dave Parks	Kem Hainebach, Dan Hoyt, Bob Fischer			April 8, 1991	
C056L	TRU Waste Generator Interview Sheet No. 91-4-8-2. Interview of Jim Haley	Kem Hainebach			April 8, 1991	
C057L	TRU Waste Generator Interview Sheet No. 91-4-8-3. Interview of Vic Elliot	Kem Hainebach			April 8, 1991	
C058L	TRU Waste Generator Interview Sheet No. 91-4-8-4. Interview of Roger Krueger	Kem Hainebach, Dan Hoyt			April 4, 1991	
C059L	TRU Waste Generator Interview Sheet No. 91-4-8-5. Interview of Allen Lingenfelter	Kem Hainebach			April 8, 1991	
C060L	TRU Waste Generator Interview Sheet No 91-4-8-6. Interview of Ted Midtaune	Kem Hainebach			April 4, 1991	
C061L	TRU Waste Generator Interview Sheet No. 91-4-10-1. Interview of Mel Coops	Kem Hainebach			April 10, 1991	
C062L	TRU Waste Generator Interview Sheet No. 91-4-16-1. Interview of Irene Meisel	Kem Hainebach			April 16, 1991	
C063L	TRU Waste Generator Interview Sheet No. 91-4-16-2. Interview of Ted Midtaune	Kem Hainebach			April 4, 1991	
C064L	TRU Waste Generator Interview Sheet No. 91-4-18-1. Interview of Bill Poulos	Kem Hainebach			April 18, 1991	
C065L	Letter to K. Gilbert: Certification of TRU Material Stored for Lawrence Livermore National Laboratory (LLNL) at the Nevada Test Site (NTS)	D.N. Nakahara, DOE San Francisco Operations Office			March 2, 1990	
C066L	Memo to Dennis K. Fisher: TRU Drums	Richard C. Ragaini			April 17, 1990	
C067L	Memo: Recertification of TRU Waste from B-332 Stored at Hazardous Waste Management	A.A. Garcia			February 15, 1991	
C068L	Memo to Harry Galles/George Campbell: TRU Containers Stored at NTS	Keith Gilbert			February 22, 1991	

Source Doc. No.	Title	Author	Publication No.	Revision	Date	Exhibit
C069L	Memo: Waste Generator Interviews to Assess LLNL TRU Inventory at NTS	Kem Hainebach	HWMS 91-44		March 28, 1991	
C070L	Memo: Waste Generator Interviews to Assess LLNL TRU Inventory at NTS	Kem Hainebach	HWMS 91-36		March 11, 1991	
C071L	Discrepancies Regarding Building 419 Liquid Solidification Process	Jeff Harrison, WASTREN, Inc			December 17, 1997	
C072L	Letter to file: Resolution of Mixed Waste Questions Concerning 1990 TRU Shipment	Kem Hainebach			April 19, 1991	
C073L	Internal correspondence to Susi Jackson: Confirmation of TRU Waste Characterization	Kem Hainebach			July 17, 1996	
C074L	External Letter to Kem Hainebach	David C Camp, LLNL			October 3, 1996	
C075L	Interview Notes of Kem Hainebach, LLNL: General Discussion of TRU Wastes Generated at LLNL and Stored at NTS	Jeff Harrision, WASTREN, Inc.			November 19, 1997	
C076L	Interview Notes of Joe Schmitz, Dan Hanson, Jim Harter, and Joseph Magana, LLNL: Discussion of TRU Operations and Waste Generated in Building 332	Jeff Harrison			November 20, 1997	
C077L	Interview Notes of Lyle Kerns, LLNL: General Discussion of TRU Operations at LLNL	Jeff Harrison, WASTREN, Inc.			November 20 - 21, 1997	
C078L	Telecon Form: Call to Wes Hayes, LLNL: General Discussion of Operations in Building 251 at LLNL	Jeff Harrison, WASTREN, Inc			November 23, 1997	
C079L	Telecon Form: Call to Lyle Kerns, LLNL: TRU Operations in Buildings 419 and 612 at LLNL	Jeff Harrison, WASTREN, Inc			December 5, 1997	
C080L	Telecon Form: Call to Lyle Kerns, LLNL: TRU Operations and Waste Generation in Building 419 at LLNL	Jeff Harrison, WASTREN, Inc			December 12, 1997	
C081L	Telecon Form: Call to Chris Carlson, LLNL: TRU Operations in Building 419 and General TRU Information at LLNL	Jeff Harrison			December 12, 1997	
C082L	Telecon Form: Call to Joe Schmitz, LLNL: Decontamination Operations in Building 419 at LLNL	Jeff Harrison, WASTREN, Inc.			December 12, 1997	
C083L	Memorandum to File: Assignment of WFNs, IDC Codes, and CC Nos. to LLNL TRU Waste	Jeff Harrison, WASTREN, Inc			December 20, 1997	
C084L	Internal correspondence to A A Church: Status of TCLP Analysis on Leaded Gloves and Leaded Glove box Windows	D.L. Kidd			March 13, 1991	
C085L	Memorandum to File: Discrepancies in RCRA Characterization of TRU Waste Generated in Building 419	Jeff Harrison, WASTREN, Inc			December 24, 1997	
C086L	Facsimile Transmission to Jeff Harrison, WASTREN, Inc.	Joe Magana, LLNL			March 10, 1998	
C087L	External Correspondence to Bill McAllister, REECO: Isotopic composition and specific activity for UCLL Pu-239 and U-233 waste	Lyle K. Kerns			September 16, 1977	
C088L	Telecon Form: Call to Dr Norman Edelstein, Lawrence Berkeley Laboratory: TRU Waste from Lawrence Berkeley Laboratory	Jeff Harrison, WASTREN, Inc.			March 16, 1998	

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Source Doc. No.	Title	Author	Author Org.	Author Loc.	Date	Publication
C089L	Acceptable Knowledge Interview Notes of Jerry Landrum, LLNL	Jeff Harrison, WASTREN, Inc			February 26, 1998	
C090L	Acceptable Knowledge Interview Notes of Rich Burns, LLNL	Jeff Harrison			February 24, 1998	
C091L	Acceptable Knowledge Interview Notes of Jean Lindsey, LLNL	Jeff Harrison, WASTREN, Inc.			February 24, 1998	
C092L	Acceptable Knowledge Interview Notes of Frank Beckell and Dick Dickinson	Jeff Harrison, WASTREN, Inc.			February 25, 1998	
C093L	Acceptable Knowledge Interview Notes of Ted Midtaune, LLNL	Jeff Harrison, WASTREN, Inc.			February 25, 1998	
C094L	Acceptable Knowledge Interview Notes of Charles M. (Skip) Peters, LLNL	Jeff Harrison, WASTREN, Inc.			February 25, 1998	
C095L	Acceptable Knowledge Interview Notes of Bill Poulos, LLNL	Jeff Harrison, WASTREN, Inc.			February 25, 1998	
C096L	Acceptable Knowledge Interview Notes of Joe Schmitz, LLNL	Jeff Harrison, WASTREN, Inc.			February 26, 1998	
C097L	Acceptable Knowledge Interview Notes of Jim Harter and Bob Gomez, LLNL	Jeff Harrison, WASTREN, Inc.			February 26, 1998	
C098L	Acceptable Knowledge Interview Notes of Terry Ludlow, LLNL	Jeff Harrison, WASTREN, Inc.			February 26, 1998	
C099L	Acceptable Knowledge Interview Notes of Joe Magana, LLNL	Jeff Harrison, WASTREN, Inc.			February 27, 1998	
C100L	Telecon Form: Call to Doug McAvoy, LLNL. "Building 332 Materials Process Lab (MPL) Operations."	Jeff Harrison, WASTREN, Inc.			February 27, 1998	
C101L	Telecon Form: Call to Jim Haley and Harry Jelonic, LLNL, "TRU Waste Generated at Lawrence Berkeley Laboratory (LBL)."	Jeff Harrison, WASTREN, Inc.			March 24, 1998	
C102L	Telecon Form: Call to Jerry Landrum, LLNL, "Chemical Usage in Building 251."	Jeff Harrison, WASTREN, Inc			March 26, 1998	
C103L	Telecon Form: Call to Jerry Landrum, LLNL, "Follow-up to March 26, 1998 Conversation with Mr. Landrum (see C102L)."	Jeff Harrison, WASTREN, Inc			April 3, 1998	
C104L	Memorandum: Discrepancies in the Segregation of Glovebox Waste from Other Radioactive Waste	Jeff Harrison, WASTREN, Inc.			April 7, 1998	
C105L	Telecon Form: Call to Doug McAvoy, LLNL, "Hydriding/Dehydriding Operations."	Jeff Harrision, WASTREN, Inc.			April 15, 1998	
C106L	Memorandum: Discrepancies and Limitations on Waste Identification and Segregation Methods	Jeff Harrison, WASTREN, Inc			April 30, 1998	
C107L	Telecon Form: Call to Lyle Kerns, LLNL: Completion of NTS Shipping Record	Jeff Harrison, WASTREN, Inc			May 1, 1998	
C108L	Telecon Form: Call to Ted Midtaune, LLNL: Radioactive Sources	Jeff Harrison, WASTREN, Inc			October 12, 1998	
C109L	Telecon Form: Call to Jerry Landrum, LLNL: Building 251 Process Information	Jeff Harrison, WASTREN, Inc			October 13, 1998	
C110L	Telecon Form: Call to Tom Schroeder, LLNL: Building 332 Process Information	Jeff Harrison, WASTREN, Inc.			October 13, 1998	
C111L	Letter to Mike Griffin	Stephen Chin			May 27, 1999	

Source Doc. No.	Title	Author			Date	Pages
C112L	Acceptable Knowledge Interview Notes. Interview of Joe Magana, LLNL	Mike Griffin, Bechtel, Nevada			May 26, 1999	
C113L	Memorandum: Waste Parameter Determination for LLNL TRU Waste	Jeff Harrison, WASTREN, Inc			September 27, 1999	
C114L	Miscellaneous Correspondence	Jeff Harrison, Scott Smith, Mike Griffin, Bruce Foster, Marlin Horsman, Richard Blauvelt, Al Celoni			August to November 1999	
C115L	Miscellaneous Correspondence	M.T. Aycock, N. Lang, W.J. Jaegge, K. Gilbert, W.G. Estill, N. Riley, J. Winstanley, LLNL	Document numbers vary		Dates vary from January 1987 to June 1990	
C116L	Memorandum to Gary Tompkins, LLNL: Preparation of Pu-239 Chloride and Nitrate Stock Solutions for Soil/Plant Uptake Studies	Joseph Magana, LLNL			November 7, 1974	
C117L	Memorandum: Waste Analysis Plan (WAP) Interpretation for the Creation of Process Flow Diagrams	Jeff Harrison, WASTREN, Inc				
C118L	Memorandum: Resolution of Discrepancies in Generation Building of TRU Waste Stored at NTS	Jeff Harrison, WASTREN, Inc			March 17, 2000	
C119L	Letter to Bruce Foster, NTS: Pyrophoric Materials Shipped to NTS by LLNL 1974-1990	Kem Hainebach, LLNL			May 23, 1997	
C120L	Memorandum: Acceptable Knowledge Update for Some LLNL-Generated TRU Waste Drums	Yun Ko Lee, Bechtel Nevada			May 23, 2001	
C121L	Sealed Containers and Layers of Confinement	Murthy Devarakonda, IT Corporation			December 18, 2001	
C122L	Container Overpack/Venting Questions	Correspondence between Bonnie Little (IT Corp.) and Yun Ko Lee (Bechtel Nevada)			February 14, 2002	
C125L	Email correspondence from Wes Estill re: LLNL Packaging Procedures	Stephanie Fevig			July 16, 2002	
C126L	Memorandum from Bonnie Little to File. "Waste Stream Delineation for LLNL TRU Waste Containers Stored at the NTS"	Bonnie Little, Shaw Environmental, Inc.			June 28, 2002	
C127L	Memorandum to Bonnie Little re: Discrepancy in Container Numbering of Some LLNL Waste Drums Retrievably Stored at NTS	Yun Ko Lee			June 27, 2002	
C128L	Telecon Form: Call to Rodney Hollister, LLNL: AK Investigation of LLNL TRU Waste Streams Stored at the Nevada Test Site	David Guerin, LANL, Carlsbad Operations			August 21, 2002	
C129L	Telecon Form: Call to W.J. Poulos, LLNL: Use of Hose Clamps in LLNL Bagout Procedures	David Guerin, LANL, Carlsbad Operations			August 28, 2002	
DR01	Discrepancy Resolution - Aerosol Cans	Yun Ko Lee			June 27, 2002	
DR02	Discrepancy Resolution - Building 251 F-Listed Chemicals	Julia Whitworth			July 21, 2002	
DR03	Discrepancy Resolution - Building 251 Metals	Julia Whitworth			July 21, 2002	
DR04	Discrepancy Resolution - Building 251 U/P Listed Chemicals	Julia Whitworth			July 21, 2002	
DR05	Discrepancy Resolution - Building 251 TC Organics	Julia Whitworth			July 21, 2002	

Source Doc No.	Title	Author	Number	Revision	Date	Publisher
DR06	Discrepancy Resolution - Building 332 F-Listed Chemicals	Julia Whitworth			July 21, 2002	
DR07	Discrepancy Resolution - Building 332 TC Organics	Julia Whitworth			July 21, 2002	
DR08	Discrepancy Resolution - Building 332 Metals	Julia Whitworth			July 21, 2002	
DR09	Discrepancy Resolution - Building 332 Characteristics	Julia Whitworth			September 22, 2002	
DR10	Discrepancy Resolution - Beryllium	Yun Ko Lee			June 27, 2002	
DR11	Discrepancy Resolution - Container ID Numbers	Yun Ko Lee			June 27, 2002	
DR12	Discrepancy Resolution - Lead Shielded Containers	Yun Ko Lee			June 27, 2002	
DR13	Building 419 F-Listed Chemicals	Julia Whitworth			July 21, 2002	
DR14	Existence of RCRA hazardous constituents in four containers generated in Building 332	Julia Whitworth			July 21, 2002	
DR15	Discrepancy Resolution for Radionuclide Characterization	J. Whitworth	DR9	0	September 23, 2002	NA
P001L	Part B Permit Application for Hazardous Waste Treatment and Storage Facilities Livermore Site		UCAR-10275-96 DR		1996-1997	LLNL
P002L	LLNL TRU Waste Certification Program: TRU Waste Certification Plan. Program Plan		M078	Revision 1, Supplement 2	February 1987	LLNL
P003L	Closure Plan for the Building 419 Solidification Unit		UCRL-AR-109412	Revision 1	June 12, 1992	LLNL
P004L	Closure Plan for the Building 419 Size Reduction Unit and Solidification Unit		UCRL-AR-118071			LLNL
P005L	Health Risk Assessment for Hazardous and Mixed Waste Management Units at Lawrence Livermore National Laboratory, 1995	L. McDowell-Boyer, J. Daniels, G. Gallegos, F. Gouveia, L. Hall	UCRL-AR-119482		November 1995.	
P006L	Lawrence Livermore National Laboratory Toxic Waste Control Group Procurement Control Procedure	C.L. Perkins			July 1983.	
P007L	TRU Container Procurement Operating Procedure		HWM Procedure Number 201		June 25, 1986	LLNL
P008L	TRU Container Inspection and Control Operating Procedure		HWM Procedure Number 202		May 22, 1986	LLNL
P009L	TRU Waste Shipment Preparation Operating Procedure		HWM Procedure Number 203		May 31, 1986	LLNL
P010L	TRU Waste Shipment Preparation Procedure		HWM Procedure Number 203	Revision 2	July 27, 1989	LLNL
P011L	TRU Waste Package Shipment Operating Procedure		HWM Procedure Number 204		June 23, 1986	LLNL
P012L	TRU Nonconformance Reports and Corrections Operating Procedure		HWM Procedure Number 205		August 14, 1986	LLNL
P013L	Building 419 TRU Container Inspection Operating Procedure		HWM Procedure Number 210		June 27, 1986	LLNL
P014L	Building 419 TRU Waste Receiving and Storage Operating Procedure		HWM Procedure Number 211	Revision 1	June 28, 1986	LLNL
P015L	Bldg. 419 TRU Waste Processing Operating Procedure		HWM Procedure No. 212		October 14, 1986	LLNL

Source Doc No.	Title	Author	Number	Revision	Date	Publisher
P016L	Building 419 TRU Waste Processing Operating Procedure		HWM Procedure No. 212	Revisions 1 and 2	December 17, 1987, November 21, 1989	LLNL
P017L	Decontamination Facility		Facility Safety Procedure 419		May 15, 1985	LLNL
P018L	Facility for Processing of Hazardous Wastes		FSP 612		July 18, 1983	LLNL
P019L	Operational Safety Procedures: Plutonium Metallurgy and Engineering Facility, Building 332		Operational Safety Procedure 332		April 1975 to June 30, 1980	LLNL Hazardous Waste Management Division.
P020L	Temporary Work Stations, Plutonium Engineering Facilities		Operational Safety Procedure 332.3		December 29, 1976	LLNL
P021L	Plutonium Waste Recovery and Packaging, Room 1378		Operational Safety Procedure 332.5		December 1981	LLNL
P022L	Analytical Chemistry Operations, Room 1329		Operation Safety Procedure 332.11		October 1980	LLNL
P023L	TRU Waste Inventory Assessment: Formal Work Control		FWC-016		February 28, 1991	LLNL
P024L	NTS TRU Waste Inventory Details		Query to LLNL Filemaker Pro "NEWRTR.FM"		December 10, 1996	LLNL
P025L	NTS TRU Waste Inventory Data		NTS database report in file "TRU_WST.TXT"		November 18, 1997	Bechtel Nevada.
P026L	Safety Analysis (SA) of the Decontamination Facility, Building 419 at Lawrence Livermore National Laboratory.	B.N. Odell	UCID-18886		June 17, 1980.	
P027L	Facility Training Program Heavy Element Facility, Building 251, Nuclear Chemistry Division	J. Landrum	M-158		March 1, 1985.	
P028L	Facility Management Plan Heavy Element Facility, Building 251, Nuclear Chemistry Division	Nuclear Chemistry Division	M-159		June 1985	LLNL
P029L	Heavy Element Facility (Building 251) Handbook, Nuclear Chemistry Division	Nuclear Chemistry Division	M-158	Revision 1	March 1986	LLNL
P030L	DOE Waste Treatability Group Guidance	Radioactive Waste Technical Support Program, T.D. Kirkpatrick	DOE/LLW-217	Revision 0	January 1995	Idaho National Engineering Laboratory.
P031L	Interim Guidance on Ensuring that Waste Qualifies for Disposal at the Waste Isolation Pilot Plant				February 13, 1997	DOE Carlsbad Area Office.
P032L	Bechtel Nevada Transuranic Waste Characterization Quality Assurance Project Plan	BN Waste Minimization and Control Projects	L-E10.301.LWC	Revision 0	February 1998	Bechtel Nevada
P033L	Waste Analysis At Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual	United States EPA Solid Waste and Emergency Response	PB94-963603, OSWER 9938.4-03		April 1994	United States EPA

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Source Doc No.	Title	Author	Document Number	Revision	Date	Publisher
P034L	Guidance For Preparing Transuranic Waste Sampling Plans	Lockheed Idaho Technologies Company and Benchmark Environmental Corporation for the DOE, Carlsbad Area Office	R-6157		February 1996.	
P035L	Transuranic Waste Characterization Quality Assurance Program Plan, Interim Change		CAO-94-1010		November 15, 1996	US DOE, CAO.
P036L	Transuranic Waste Baseline Inventory Report	Carlsbad Area Office Technical Assistance Contractor, DOE/CAO-95-1121, Rev. 2, Vol. 3, DOE	DOE/CAO-95-1121	Revision 2	December 1995.	
P037L	Plowshare	E. Teller, University of California	UCRL-7222		February 4, 1963	Lawrence Radiation Laboratory.
P038L	Facility Safety Procedure, Plutonium Facility--Building 332		FSP-332	Revision 3	June 1989	LLNL
P039L	LLNL Plutonium Facility B332 Operations Manual for Maintenance/Operations Department		M-246		January 26, 1990	LLNL
P040L	Safety Analysis Report for the Heavy Element Facility (Building 251)		UCRL-AR-113377		September 30, 1994	LLNL
P041L	Facility Safety Procedures, Heavy Element Facility Building 251		FSP-251		July 1993	LLNL
P042L	Preliminary Hazards Analysis Building 233 Container Storage Unit	S.G. Lane, C. Vannicola, S. Brereton	UCRL-AR-115885		May 1994	LLNL
P043L	Procedure for TRU Waste Solidification	T. Midtaune	MM-03		November 2, 1986	Materials Management, LLNL
P044L	Procedure for TRU Waste Solidification	T. Midtaune	MM-03		February 19, 1987	Materials Management, LLNL
P045L	Safety Analysis Report for Building 332		UCRL-51590		June 20, 1974	LLNL
P046L	Final Safety Analysis Report (FSAR) for Building 332, Increment III.	B.N. Odell, A.J.Toy Jr.	UCID-17565		August 31, 1977.	
P047L	Safety Analysis Report for Building 231 Central Vault at Lawrence Livermore Laboratory, and OSPs--Central Vault and Material Balance Area, Buildings 231, 232, and 233, and Materials Management Manual, Procedures for Controlled Materials	B.N. Odell, A.J. Toy, Jr.	UCRL-51815, OSP 231.1, M-022		August 5, 1975.	
P048L	Operational Safety Procedure for Analytical Laboratory Room 1321, 1321A; Workstations #2101, #2105 and #2106	J. Magana	OSP 332.39		November 1, 1996	LLNL
P049L	TRU Waste from the Superblock	T.T. Coburn	UCRL-ID-127458		May 27, 1997	LLNL, downloaded from LLNL
P050L	Operational Safety Procedure for Metallography Laboratory, Room 1322, 1322A & 1322B; Workstations #2201 and #2202		OSP 332.17		June 1, 1993	LLNL
P051L	LLNL Radioactive Waste Management Plan as per DOE Order 5820.2		UCID-20276		December 10, 1984	LLNL

Source Doc. No.	Title	Author	Publication Number	Revision	Date	Publisher
P052L	Molten Salt Extraction (MSE) Salt Cleanup	T.W. Crawford, D.P. McAvoy	UCRL-LR-107105		April 1991	LLNL, downloaded from the DOE Information Bridge (https://apollo.osti.gov/dds).
P053L	Formation of Pu Amorphous Alloys or Metastable Structures in Pu-Fe, Pu-Ta, and Pu-Si Alloys	H.F. Rizzo, A.W. Echeverria	UCRL-92693		August 20, 1985	LLNL, downloaded from the DOE Information Bridge (https://apollo.osti.gov/dds).
P054L	Loss of Ga in Sputtered Deposits Made from a Pu at % Alloy	H.F. Rizzo, E.D. McClanahan, D.S. Margolies, A.W. Echeverria	UCRL-92692		November 15, 1985	LLNL, downloaded from the DOE Information Bridge (https://apollo.osti.gov/dds).
P055L	Technology Review Report, Pyrochemical Processing of Plutonium	M.S. Coops, J.B. Knighton, and L.J. Mullins	UCRL-88116		September 8, 1982	Downloaded from the DOE Information Bridge (https://apollo.osti.gov/dds).
P056L	Evaluation of Nonaqueous Processes for Nuclear Materials, Task Report to the Long-Range Planning Committee	B.C. Musgrave, J.Z. Grens, J.B. Knighton, M. S. Coops	UCID-20016		December 1983	LLNL, downloaded from the DOE Information Bridge (https://apollo.osti.gov/dds).
P057L	Glovebox Enclosed D.C. Plasma Source for the Determination of Metals in Plutonium	W.F. Morris	UCRL-93272		January 15, 1986.	
P058L	Tensile Testing at High Temperatures in a Glovebox	M.P. Stratman	UCRL-ID-104929		October 1, 1990	
P059L	Overview of Lawrence Berkeley National Laboratory				April 1998	Website publication (www.lbl.gov).
P060L	Lawrence and his Laboratory	J.L. Heilborn, R.W. Seidel, B. R. Wheaton.				
P061L	Radioactive Waste Information System Users' Manual	Reynolds Electrical & Engineering Company, Inc			October 1982.	
P062L	Material Safety Data Sheets (MSDSs) and Technical Data.					

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Source Doc. No.	Title	Author	Number	Revision	Date	Publisher
P063L	Management of TRU Waste by TRU Waste Generators		WCP-20	Revision 0	September 8, 1995	LLNL
P064L	Certification of Transuranic Waste Packages		WCP-21	Revision 1	November 20, 1998	LLNL
P065L	Process Knowledge Evaluation for Facility-Specific Waste Streams		WCP-14	Revision 0, 1	August 1993, June 1994, December 1995	LLNL
P066L	Transuranic Waste Characterization Quality Assurance Project Plan		UCRL-AR-119486	Revision 0	September 15, 1997	LLNL
P067L	TRU Waste Program Certification and Quality Assurance Plan		M-078-121		June 1990 and December 1991	LLNL
P068L	Gamma Ray Spectrometry of Waste Parcels Procedures. Technical Implementing Procedure		TIP-HEF-010		June 8, 1993	LLNL
P069L	Gamma Ray Spectrometry of Waste Parcels Procedure: Heavy Element Facility, Quality Operating Procedure		TIP-HEF-024		June 5, 1995	LLNL
P070L	Waste Acceptance Criteria (WAC) Procedures: Technical Implementing Procedure		TIP-HEF-008		July 28, 1993	LLNL
P071L	TRU Procedure Number 6--TRU Waste Data Collection				February 19, 1988	LLNL
P072L	Building 231 Complex – General Operations Operational Safety Procedure 231				July 1, 1978	LLNL
P073L	Central Vault and Material Balance Area Buildings 231, 232 Fenced Compound, 233, and 234. Operational Safety Procedure 231.1		OSP 231.1		March 1, 1971-October 27, 1982	LLNL
P074L	Building 231 Complex–General Operations. Facility Safety Procedure 231.		FSP 231		October 6, 1981	LLNL
P075L	Hazardous Materials Business Plan for Alameda County				February 28, 1990	LLNL
P076L	Building 419 TRU Waste Verification Operating Procedure		HWM Procedure 216		December 10, 1986	LLNL
P077L	Installation of Vent Clips in TRU Waste Drums at Building 419		OSP 419.12		October 22, 1986 and November 13, 1987	LLNL
P078L	Neutralization of Hydrogen Fluoride		OSP 419.11		July 11, 1987	LLNL
P079L	Handling and Incinerating Carcinogens		OSP 612.2		April 19, 1984	LLNL
P080L	Waste Compactor/Bailer		OSP 612.6		October 28, 1987	LLNL
P081L	Transferring Outdated Ether to Site 300		OSP 612.12		February 1, 1988	LLNL
P082L	Building 624 Incinerator Trial Burn		OSP 612.13		February 25, 1988	LLNL
P083L	Bulking of Aqueous Wastes		OSP 612.16		May 1991	LLNL
P084L	Bulking of Identical or Nearly Identical Materials		OSP 612.17		May 1991	LLNL
P085L	Heavy Element Facility (Building 251) Handbook Appendix F, Procedures 1.0 and 1.1, Air Transfers of Radioactive Materials		M-158, Appendix F 1.0	Revision 1, and 1.1	June 5, 1987	Nuclear Chemistry Division, LLNL
P086L	Heavy Element Facility (Building 251) Handbook Appendix F, Procedure 5.1, Liquid Waste Solidification		M-158	Revision 1	December 9, 1986	Nuclear Chemistry Division, LLNL
P087L	HWM Management of TRU Containers		HWM Procedure 202	Revision 3	March 12, 1999	LLNL

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Source Doc. No.	Title	Author	Document Number	Revision	Date	Originating Organization
P088L	Nevada Test Site Waste Management Program Health and Safety Program Plan. Attachment C: Site-Specific Health and Safety Plan - Area 5 TRU Pad		L-E10.303.LAA	Revision 3	April 20, 1998	Waste Management Division Nevada Test Site.
P089L	Waste Management Program Site-Specific Health and Safety Plan Transuranic Waste Characterization Project Waste Examination Facility Area 5 Nevada Test Site	Bechtel Nevada Waste Management Program	L-E 10.344.LWC	Revision 3	December 1, 1998	
P090L	Management Plan for the Transuranic (TRU) Pad Cover Building (TPCB) at the Area 5 Radioactive Waste Management Site (RWMS)		L-E10.333.LWC		June 9, 1998	Bechtel Nevada Waste Management Program.
P091L	Uptake of Plutonium and Americium by Barley from Two Contaminated Nevada Test Site Soils.	R.K. Schulz, G.A. Tompkins, L. Leventhal, and K.L. Babcock.	UCB-34P211-2		June 16, 1975	
P092L	Acceptable Knowledge Document NTS Stored Transuranic Waste	Bechtel Nevada	B-2151/00.01	Revision 2	August 2000	
P093L	Acceptable Knowledge Document for NTS-Stored Transuranic Waste - LLNL Waste. Post - 1985 Generated Waste Streams.	Bechtel Nevada	B-2151/00.02	Revision 0	August 2000	
P094L	Acceptable Knowledge Document for NTS-Stored Transuranic Waste - Lawrence Berkely Laboratory Waste	Bechtel Nevada	B-2151/00.03	Revision 0	August 2000	
P095L	TRU Waste Examination, Segregation, and Repacking	Bechtel Nevada	OP-2151.402	Revision 2	June 25, 2001.	
P096L	TRU Tracking System User Guide				June 1998	Bechtel Nevada Waste Management Department
P097L	TRU Waste Visual Examination, Segregation, and Repacking		OP-2151.402 / CCP-TP-062	Revision Number 5	April 5, 2002	Bechtel Nevada
U001L	Assessment of Transuranic Waste Inventory Stored at the Nevada Test Site	Lawrence Livermore National Laboratory, Kem Halnebach			1991	
U002L	TRU Spreadsheet and Supporting Documentation				April 19, 1991	LLNL
U003L	Data Bases used for the Inventory Assessments of the TRU Drums Stored at DOE's Nevada Test Site (1974-1990)	Lawrence Livermore National Laboratory			March 13, 1991	
U004L	Federal Facility Complicance Act Draft Site Treatment Plan for Lawrence Livermore National Laboratory		94-W 278/5400.2.a.3.1		August, 1994	DOE Oakland Operations Office
U005L	Building 419 TRU Waste Packaging Procedure	Lawrence Livermore National Laboratory	HWM Procedure No. 213		October 20, 1986	
U006L	Building 419 TRU Waste Package Transfer	Lawrence Livermore National Laboratory	HWM Procedure No. 214		December 1, 1986	
U007L	Building 419 TRU Waste Verification	Lawrence Livermore National Laboratory	HWM Procedure No. 215		December 1, 1986	

Source Doc No.	Title	Author	Number	Revision	Date	Publisher
U008L	Miscellaneous Building 612 LLNL Waste Management Procedures	Lawrence Livermore National Laboratory				
U009L	Schematic of TRU Wastes Managed from 1974 through 1990 at LLNL				March 28, 1991	LLNL
U010L	Hazard/Control Material ID Tags and Associated Documentation				1977	LLNL
U011L	Waste Operations Department TRU IDCs	Reynolds Electrical & Engineering			January 2, 1996	
U012L	Instructions for Solidification of Hydrocarbons, Oil and Plutonium Mixed, and Solidification of Acid	Ted Midtaune				LLNL
U013L	Safety Analysis Report for The Heavy Element Facility (Building 251)	Lawrence Livermore National Laboratory, Donald J. Kvam, UCID-19579			October 11, 1982	
U014L	Uncontrolled NTS TRU Waste Inventory Details				March 1998	WASTREN, Inc.
U015L	Uncontrolled NTS TRU Inventory Data	WASTREN, Inc.			March 1998	
U016L	Excerpts from Nevada Test Site Shipping Records	Lawrence Livermore National Laboratory			1974-1986	
U017L	Room Logbooks				June 1986 to September 1992	LLNL
U018L	Room Logbook Spreadsheets	Lawrence Livermore National Laboratory			June 1986 to September 1992	
U019L	Total Waste Management System (TWMS) Database Information, TRU Container Inventory Query in Excel Spreadsheets	Lawrence Livermore National Laboratory			1999	
U020L	LLW-TRU Waste Disposal Requisitions	Lawrence Livermore National Laboratory			July 19, 1985 to March 23, 1998	
U021L	Process Knowledge Evaluation	Lawrence Livermore National Laboratory			November 16, 1994 - March 22, 1999	
U022L	LLNL TRU Container Data Packages	Lawrence Livermore National Laboratory			January 1994 to April 1999	
U023L	Real-Time Radiography	Lawrence Livermore National Laboratory			1996-1999	
U024L	ChemTrack Database. Building 251, 332, 419 Chemical Inventory Queries Output to Excel Spreadsheets	Lawrence Livermore National Laboratory			November 1992	
U025L	Building 332 TRU Waste Solidification Procedure	Lawrence Livermore National Laboratory	MM-03	Revision 0	April 8, 1992	
U026L	LLNL PCB Inventory	Lawrence Livermore National Laboratory			May 7, 1990	
U027L	Miscellaneous Building 419 LLNL Waste Management Procedures					LLNL
U028L	Control Material ID Tags	Lawrence Livermore National Laboratory			July 6, 1982 to June 18, 1984	
U029L	Building 612 Radioactive Waste Logbooks	Lawrence Livermore National Laboratory			1974 - 1985	
U030L	Selected LLNL Hazardous Waste Disposal Requisitions	Lawrence Livermore National Laboratory				

Source Doc No.						
U031L	Attachment #1: Differences in the NRC and the DOE Certification of Compliance for the Super Tiger				March 31, 1987	LLNL
U032L	Procedure for Shipping Contaminated Laundry Off-Site		HWM SOP 419.1	Revision 0	October 1, 1985	LLNL
U033L	Procedure for Decontamination of the NaK Cooling System		HWM SOP 419.3	Revision 0	November 1, 1985	LLNL
U034L	Radioactive Low Specific Activity (LSA) Shipments to NTS	Lawrence Livermore National Laboratory	HWM SOP 612.1	Revision 0	November 1, 1985	
U035L	Procedure for Chemical Shipments (Bulk and Drummed Liquids)		HWM SOP 612.2	Revision 0	October 1, 1985	LLNL
U036L	Thursday Waste Run	Lawrence Livermore National Laboratory	HWM SOP 612.3	Revision 0	November 15, 1985	
U037L	Incin Procedure					LLNL
U038L	Draft Procedure for Packing of "Labpacks "		HWM 612.4			LLNL
U039L	Parcel Cards for Waste Containers Shipped to NTS	Lawrence Livermore National Laboratory			1986 - 1990	
U040L	United States Nuclear Tests-By Date		DOE/NV - 209	Revision 15		
U041L	Waste Characterization Summaries of Heavy Element Facility Experiment Request Forms 1974-1990	Lawrence Livermore National Laboratory, C. Cate, et al	UCRL-MI-136581		December 27, 1999	
U042L	Building 419 and 612 Documentation Notes	Lawrence Livermore National Laboratory. Compiled by Mike Griffin and Phil Ralphs, Bechtel Nevada	UCRL MI 138022		September 1, 1979 - December 1, 1988, March 1997	
U043L	Building 251 Documentation Notes	Lawrence Livermore National Laboratory	UCRL MI 138020		June 1, 1980 to November 1981	
U044L	Summaries of Building 332 Operation Safety Procedure	Complied by Mike Griffin and Phil Ralphs	OSP 332		October 1, 1969 to April 29, 1975	LLNL
U045L	Summaries of Miscellaneous Operational Safety Procedures from Building 332	Compiled by Mike Griffin and Phil Ralphs. OSP 332.1; OSP 332.8; OSP 332.11; OSP 332.17; OSP 332.19; OSP 332.21; OSP 332.25; OSP 332.26; OSP 332.32; OSP 332.40; OSP 332 Supplement 22; OSP 332 Supplement 73; OSP 332 Supplement 186: OSP 332 Supplement 205			May 27, 1971 to April 9, 1984	LLNL
U046L	Building 231 Documentation Notes		UCRL MI 138019		October 25, 1968 to June 1989	LLNL
U047L	Historical Radiography Data for NTS-Stored TRU Waste Generated at LLNL	Bechtel Nevada			February 2000	
U048L	Untitled--NTS Repackaging Log - Batch, Video Tape ID, Generation Building, and Waste Matrix Code.	Yun Ko Lee, Bechtel Nevada			November 15, 2001	
U049L	Untitled--NTS Repackaging Log - for LLNL Containers Generated Prior to 1986	Yun Ko Lee, Bechtel Nevada			November 15, 2001	
U050L	NTS Repackaging Log - for LLNL Containers Generated After 1985	Yun Ko Lee, Bechtel Nevada			November 15, 2001	
U051L	TRU Waste Packing Log				June 25, 2002	Bechtel Nevada

Source Doc No.	Title	Author	Document Number	Revision	Date	Publisher
U052L	TRU_DS Database Information and TRU_DS User's Guide	Bechtel Nevada	OI-2151.401	Version 5.0	Sept. 2000 (Guide), July 2002 (database download)	
U053L	NTS Inventory Tracking Sheet	Shaw Environmental and Infrastructure, Inc.		Rev. 5	September 26, 2002	LANL Carlsbad
U054L	Analysis of Historic LLNL Radioassay Data	David Guerin, LANL, Carlsbad Operations			September 16, 2002	
U055L	Analysis of NTS Radioassay Data for LLNL TRU Waste	David Guerin, LANL, Carlsbad Operations			September 17, 2002	
U056L	NTS AK Container Inventory Database Source Document References	Shaw Environmental & Infrastructure for LANL Carlsbad Operations			September 23, 2002	

CHARACTERIZATION INFORMATION SUMMARY

NTLLNL-S5400-332 Lot 1

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Waste Stream Lot Number: Lot 1 WASTE STREAM NTLLNL-S5400-332 COF 5/8/03
WSPF # NTS54332RO

AK Expert Review: David Duran Date: 5/8/03

STR Review (if necessary): [signature] Date: 5/14/03

SPQAO Review: John Hua Date: 05-08-2003

SPM Review: Arnold Fin Date: 15 MAY 03

SPQAO signature indicates that the information presented in this package is consistent with analytical batch reports.

SPM signature certifies that through Acceptable Knowledge testing and/or analysis that the waste identified in this summary is not corrosive, ignitable, reactive, or incompatible with the TSDF.

A summary of the Acceptable Knowledge regarding this waste stream containing specific information about the corrosivity, reactivity and ignitability of the waste stream is included as an attachment to the Waste Stream Profile Form. By reference, that information is included in this lot.

List of procedures used:
RADIOGRAPHY:
CCP-TP045, Rev 6, CCP RTR #5 Radiography Inspection Operating Procedures, January 31, 2003
CCP-TP045, Rev 5, CCP RTR #5 Radiography Inspection Operating Procedures, November 20, 2002
CCP-TP045, Rev 4, CCP RTR #5 Radiography Inspection Operating Procedures, September 18, 2002
CCP-TP045, Rev 3, CCP RTR #5 Radiography Inspection Operating Procedures, March 20, 2002
CCP-TP045, Rev 2, CCP RTR #5 Radiography Inspection Operating Procedures, December 10, 2001

VISUAL EXAMINATION:
CCP-TP-061, Rev 4, CCP TRU Waste Visual Examination, Segregation and Repacking, May 21, 2002
CCP-TP-061, Rev 3, CCP TRU Waste Visual Examination, Segregation and Repacking, February 11, 2002

HEADSPACE GAS ANALYSIS:
CCP-TP-007, Rev 16, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, February 3, 2003
CCP-TP-007, Rev 15, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, October18 , 2002
CCP-TP-007, Rev 14, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, September 26, 2002
CCP-TP-007, Rev 13, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, September 4 , 2002
CCP-TP-007, Rev 12, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, July 23, 2002
CCP-TP-007, Rev 11, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Procedure, January 28, 2002
CCP-TP-009, Rev 11, CCP Single Sample Manifold Data Handling Procedure, February 5, 2003
CCP-TP-009, Rev 10, CCP Single Sample Manifold Data Handling Procedure, September 26, 2002
CCP-TP-009, Rev 9, CCP Single Sample Manifold Data Handling Procedure, September 20, 2002
CCP-TP-009, Rev 8, CCP Single Sample Manifold Data Handling Procedure, January 30, 2002

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CCP-TP-029, Rev 11, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, February 12, 2003
CCP-TP-029, Rev 10, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, October 18, 2002
CCP-TP-029, Rev 9, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, September 26, 2002
CCP-TP-029, Rev 8, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, September 20, 2002
CCP-TP-029, Rev 7, CCP Single Sample Manifold Headspace Gas Sampling and Analysis Methods and Equipment Calibration, January 30, 2002
CCP-TP-032, Rev 10, CCP Single Sample Manifold Data Validation Procedure, February 3, 2003
CCP-TP-032, Rev 9, CCP Single Sample Manifold Data Validation Procedure, October 1, 2002
CCP-TP-032, Rev 8, CCP Single Sample Manifold Data Validation Procedure, September 26, 2002
CCP-TP-032, Rev 7, CCP Single Sample Manifold Data Validation Procedure, September 20, 2002
CCP-TP-032, Rev 6, CCP Single Sample Manifold Data Validation Procedure, January 29, 2002

RADIOASSAY:
CCP-TP-051, Rev 5, CCP Mobile Segmented Gamma Scanner Operation, September 19 , 2002
CCP-TP-051, Rev 4, CCP Mobile Segmented Gamma Scanner Operation, July 12, 2002
CCP-TP-051, Rev 3, CCP Mobile Segmented Gamma Scanner Operation, January 29, 2002

DATA GENERATION REVIEW:
CCP-TP-052, Rev 5, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, January 22, 2003
CCP-TP-052, Rev 4, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, September 19, 2002
CCP-TP-052, Rev 3, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, July 19, 2002
CCP-TP-052, Rev 2, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, March 7, 2002
CCP-TP-052, Rev 1, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, March 6, 2002
CCP-TP-052, Rev 0, CCP Mobile Segmented Gamma Scanner Data Reviewing, Validating and Reporting, Sept. 20, 2001

PROJECT LEVEL DATA VALIDATION/DQO RECONCILIATION:
CCP-TP-001, Rev 8, CCP Project Level Data Validation, February 3, 2003
CCP-TP-001, Rev 7, CCP Project Level Data Validation, January 13, 2003
CCP-TP-001, Rev 6, CCP Project Level Data Validation, May 15, 2002
CCP-TP-001, Rev 5, CCP Project Level Data Validation, March 8, 2002
CCP-TP-001, Rev 4, CCP Project Level Data Validation, December 14, 2001
CCP-TP-002, Rev 12, CCP Reconciliation of DQOs and Reporting Characterization Data, April 30, 2003
CCP-TP-002, Rev 11, CCP Reconciliation of DQOs and Reporting Characterization Data, October 24, 2002
CCP-TP-002, Rev 10, CCP Reconciliation of DQOs and Reporting Characterization Data, June 19, 2002
CCP-TP-002, Rev 9, CCP Reconciliation of DQOs and Reporting Characterization Data, June 6, 2002
CCP-TP-002, Rev 8, CCP Reconciliation of DQOs and Reporting Characterization Data, March 7, 2002
CCP-TP-002, Rev 7, CCP Reconciliation of DQOs and Reporting Characterization Data, February 18, 2002
CCP-TP-002, Rev 6, CCP Reconciliation of DQOs and Reporting Characterization Data, January 21, 2002
CCP-TP-003, Rev 12, CCP Sampling Design and Data Analysis for RCRA Characterization, January 25, 2003
CCP-TP-003, Rev 11, CCP Sampling Design and Data Analysis for RCRA Characterization, January 20, 2003
CCP-TP-003, Rev 10, CCP Sampling Design and Data Analysis for RCRA Characterization, December 4, 2002
CCP-TP-003, Rev 9, CCP Sampling Design and Data Analysis for RCRA Characterization, October 10, 2002
CCP-TP-003, Rev 8, CCP Sampling Design and Data Analysis for RCRA Characterization, August 23, 2002
CCP-TP-003, Rev 7, CCP Sampling Design and Data Analysis for RCRA Characterization, June 3, 2002
CCP-TP-003, Rev 6, CCP Sampling Design and Data Analysis for RCRA Characterization, March 20, 2002
CCP-TP-003, Rev 5, CCP Sampling Design and Data Analysis for RCRA Characterization, March 18, 2002
CCP-TP-003, Rev 4, CCP Sampling Design and Data Analysis for RCRA Characterization, January 17, 2002
CCP-TP-030, Rev 8, CCP WWIS Data Entry and TRU Waste Certification, March 26, 2003

Attachment 3 – Characterization Information Summary Cover Page

CCP-TP-030,Rev 7, CCP WWIS Data Entry and TRU Waste Certification, January 8, 2003
CCP-TP-030, Rev 6, CCP WWIS Data Entry and TRU Waste Certification, September 19, 2002
CCP-TP-030, Rev 5, CCP WWIS Data Entry and TRU Waste Certification, June 27, 2002
CCP-TP-030, Rev 4, CCP WWIS Data Entry and TRU Waste Certification, May 21, 2002
CCP-TP-030, Rev 3, CCP WWIS Data Entry and TRU Waste Certification, October 24, 2001

WAP CERTIFICATION:
CCP-PO-001, Rev 5, CCP Transuranic Waste Characterization Quality Assurance Project Plan, February 5, 2003
CCP-PO-001, Rev 4, CCP Transuranic Waste Characterization Quality Assurance Project Plan, May 31, 2002
CCP-PO-001, Rev 3, CCP Transuranic Waste Characterization Quality Assurance Project Plan, January 14, 2002
CCP-PO-002, Rev 5, CCP Transuranic Waste Certification Plan, February 12, 2003
CCP-PO-002, Rev 4, CCP Transuranic Waste Certification Plan, May 17, 2002
CCP-PO-002, Rev 3, CCP Transuranic Waste Certification Plan, January 21, 2002
CCP-PO-009, Rev 5, CCP NTS Interface Document, October 25, 2002
CCP-PO-009, Rev 4, CCP NTS Interface Document, September 30, 2002
CCP-PO-009, Rev 3, CCP NTS Interface Document, September 18, 2002
CCP-PO-009, Rev 2, CCP NTS Interface Document, June 19, 2002
CCP-PO-009, Rev 1, CCP NTS Interface Document, January 23, 2002

Attachment 3 Table 1 - Correlation of Container Identification Numbers to Batch Data Report Numbers

Container ID Number	On-Line Headspace Gas BDR	NDA BDR	RTR BDR	VE BDR	Solids Sampling BDR	Solids Analytical BDR
NT000660	NT102902A	NTSNDA22	NTRTR0039	N/A	N/A	N/A
NT000661	NT102802B	NTSNDA22	NTRTR0036	N/A	N/A	N/A
NT000662	NT103002A	NTSNDA22	NTRTR0037	N/A	N/A	N/A
NT000675	NT103102A	NTSNDA22	NTRTR0039	N/A	N/A	N/A
NT000677	NT103102A	NTSNDA22	NTRTR0039	N/A	N/A	N/A
NT000678	NT110402A	NTSNDA22	NTRTR0039	N/A	N/A	N/A
NT000771	NT082802A	NTSNDA11	NTRTR0016	N/A	N/A	N/A
NT000832	NT052202A	NTSNDA18	NTRTR0012	N/A	N/A	N/A
NT010889	NT120302B	NTSNDA22	NTRTR0039	N/A	N/A	N/A
NT010896	NT082702A	NTSNDA11	NTRTR0016	N/A	N/A	N/A
NT010914	NT062702A	NTSNDA18	NTRTR0015	N/A	N/A	N/A
NT010915	NT070202A	NTSNDA17	NTRTR0015	N/A	N/A	N/A
NT010918	NT052202A	NTSNDA17	NTRTR0013	N/A	N/A	N/A
NT010920	NT070202A	NTSNDA18	NTRTR0013	N/A	N/A	N/A
NT010922	NT052102A	NTSNDA18	NTRTR0012	N/A	N/A	N/A
NT010942	NT062402A	NTSNDA18	NTRTR0017	N/A	N/A	N/A
NT010943	NT062402A	NTSNDA17	NTRTR0017	N/A	N/A	N/A
NT010946	NT062402A	NTSNDA17	NTRTR0017	N/A	N/A	N/A
NT010948	NT062402A	NTSNDA18	NTRTR0017	N/A	N/A	N/A
NT010949	NT050602A	NTSNDA17	NTRTR0011	N/A	N/A	N/A
NT010953	NT050102A	NTSNDA17	NTRTR0011	N/A	N/A	N/A
NT010954	NT050202A	NTSNDA17	NTRTR0011	N/A	N/A	N/A
NT010955	NT050602A	NTSNDA18	NTRTR0011	N/A	N/A	N/A
NT010956	NT042502A	NTSNDA17	NTRTR0011	N/A	N/A	N/A
NT980021	NT070202A	NTSNDA18	NTRTR0015	N/A	N/A	N/A
NT980055	NT061902A	NTSNDA17	NTRTR0011	N/A	N/A	N/A
NT980152	NT050902A	NTSNDA18	NTRTR0002	NT-VE-00010	N/A	N/A
NT980153	NT050902A	NTSNDA17	NTRTR0005	NT-VE-00008	N/A	N/A
NT980172	NT050902A	NTSNDA17	NTRTR0003	NT-02-002	N/A	N/A
NT980173	NT061102A	NTSNDA18	NTRTR0006	NT-VE-00007	N/A	N/A
NT980403	NT070102A	NTSNDA17	NTRTR0003	NT-VE-00008	N/A	N/A
NT980409	NT070102A	NTSNDA11	NTRTR0004	NT-VE-00003	N/A	N/A
NT980426	NT042502A	NTSNDA17	NTRTR0002	NT-02-001	N/A	N/A
NT980472	NT051602A	NTSNDA18	NTRTR0012	N/A	N/A	N/A
NT980482	NT050602A	NTSNDA17	NTRTR0003	NT-VE-00011	N/A	N/A
NT980485	NT042402A	NTSNDA18	NTRTR0001	NT-02-001	N/A	N/A
NT980498	NT062402A	NTSNDA17	NTRTR0004	NT-VE-00005	N/A	N/A
NT990517	NT051602A	NTSNDA17	NTRTR0001	NT-VE-00006	N/A	N/A
NT990560	NT070102A	NTSNDA18	NTRTR0004	NT-VE-00011	N/A	N/A
NT990563	NT061102A	NTSNDA11	NTRTR0002	NT-VE-00003	N/A	N/A
NT990576	NT070102A	NTSNDA18	NTRTR0005	NT-VE-00011	N/A	N/A

Signature of Site Project Manager		Printed Name		Date
[signature]		COURTLAND FESMIRE		9MAY03

Lot 1 Waste Stream NTLLNL-S5400-332 Waste Stream Profile Form Number NTS54332R0

Additional Drum Cross Correlation

Original number	Additional Drum #	Action	New Number	BDR Number
NT980426	NT281149	REPACKED AFTER VISUAL EXAM	NT021077	NT-02-001
NT980485	NT281035	REPACKED AFTER VISUAL EXAM	NT021078	NT-02-001
NT980172	LL85900208	REPACKED AFTER VISUAL EXAM	NT021079	NT-02-002
NT980409	NT284007	REPACKED AFTER VISUAL EXAM	NT021082	NT-02-003
NT990563	NT280061	REPACKED AFTER VISUAL EXAM	NT021081	NT-02-003
NT980153	NT281120	REPACKED AFTER VISUAL EXAM	NT031090	NT-VE-00008
NT980403	NT282137	REPACKED AFTER VISUAL EXAM	NT031089	NT-VE-00008
NT980482	NT282080	REPACKED AFTER VISUAL EXAM	NT031094	NT-VE-00011
NT980498	NT280092	REPACKED AFTER VISUAL EXAM	NT021084	NT-VE-00005
NT990517	NT281027	REPACKED AFTER VISUAL EXAM	NT021085	NT-VE-00006
NT980152	NT282003	REPACKED AFTER VISUAL EXAM	NT031093	NT-VE-00010
NT980173	NT283160	REPACKED AFTER VISUAL EXAM	NT031086	NT-VE-00007
NT990560	NT284008	REPACKED AFTER VISUAL EXAM	NT031095	NT-VE-00011
NT990576	NT283195	REPACKED AFTER VISUAL EXAM	NT031097	NT-VE-00011

ADDITIONAL INFORMATION REGARDING THE CROSS-CORRELATION OF BDR NUMBERS

Headspace Gas Batch Data Reports(BDRs) are sequentially numbered by the date that the batch was run. For example:

NT050102A

1. The NT represents the Nevada Test Site
2. 05 indicates that the batch was run in May
3. 01 indicates that the batch was run on the first of May
4. 02 indicates the year – 2002
5. The A indicates that the "A" instrument was used.

This numbering system has remained unchanged during CCP operations at NTS.

NDA BDRs are sequentially numbered from 1 to 28. For example:

NTSNDA22

1. The NTS represents the Nevada Test Site
2. NDA represents the process--Non-destructive assay
3. The number represents the sequential number of the BDR

NDE BDRs are sequentially numbered from 1 to 54. The first NDE BDR was numbered as NTS-001. Each subsequent BDR was numbered as NTRTR0002. There maybe some variation in the number of zeros placed before the actual significant number.

1. The NT represents the Nevada Test Site
2. RTR represents the process--Radiography
3. The number represents the sequential number of the BDR

VE BDRs are sequentially numbered. The first two BDRs were numbered as NT-02-001 and NT-02-002. Subsequent BDRs were numbered as NT-VE-00003. Again there maybe some variation in the number of zeros placed before the actual significant number.

1. The NT represents the Nevada Test Site
2. VE represents the process—Visual Examination
3. The number represents the sequential number of the BDR

Attachment 2 - UCL_{90} Evaluation Form

WSPF #:	NTLLNL-S5400-332 Revision 0				Waste Stream Lot Number:			1			
ANALYTE	Transform Data Used (No, Data-Log, SQTI, other)	# Samples	# Samples above MDL	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
Benzene	DATA-LOG	41	1	2.29	0.85	0.33	0.92	10	2.30	NO	N/A
Bromoform	NO	41	0	2.31	1.97	0.18	2.00	10	N/A	NO	N/A
Carbon tetrachloride	DATA-LOG	41	3	4.50	0.93	0.78	1.09	10	2.30	NO	N/A
Chlorobenzene	NO	41	0	3.54	3.51	0.06	3.52	10	N/A	NO	N/A
Chloroform	DATA-LOG	41	4	2.42	1.03	0.45	1.12	10	2.30	NO	N/A
Cyclohexane[a]	———	0	———	———	———	———	———	———	———	———	———
1,1-Dichloroethane	DATA-LOG	41	5	2.26	0.68	0.57	0.80	10	2.30	NO	N/A
1,2-Dichloroethane	NO	41	0	2.62	2.39	0.49	2.49	10	N/A	NO	N/A
1,1-Dichloroethylene	DATA-LOG	41	1	2.40	0.50	0.32	0.57	10	2.30	NO	N/A
cis-1,2-Dichloroethylene	SQTI	41	0	1.77	1.55	0.49	1.65	10	3.16	NO	N/A
trans-1,2-Dichloroethylene	NO	41	0	2.71	1.93	0.60	2.05	10	N/A	NO	N/A
Ethyl benzene	DATA-LOG	41	0	1.44	1.37	0.13	1.40	10	2.30	NO	N/A
Ethyl ether	DATA-LOG	41	1	2.37	0.54	0.30	0.60	10	2.30	NO	N/A
Formaldehyde[c]	———	0	———	———	———	———	———	——— 10	———	———	———
Hydrazine[d]	———	0	———	———	———	———	———	——— 10	———	———	———
Methylene chloride	DATA-LOG	41	1	2.53	0.88	0.38	0.96	10	2.30	NO	N/A
1,1,2,2-Tetrachloroethane	NO	41	0	4.28	3.84	0.29	3.90	10	N/A	NO	N/A
Tetrachloroethylene	DATA-LOG	41	1	3.87	1.20	0.44	1.29	10	2.30	NO	N/A
Toluene	DATA-LOG	41	2	2.42	1.20	0.36	1.27	10	2.30	NO	N/A
1,1,1-Trichloroethane	DATA-LOG	41	5	4.07	0.15	0.92	0.34	10	2.30	NO	N/A
Trichloroethylene	DATA-LOG	41	2	2.95	1.24	0.46	1.33	10	2.30	NO	N/A
1,1,2-Trichloro-1,2,2-trifluoroethane	DATA-LOG	41	1	2.38	0.78	0.27	0.84	10	2.30	NO	N/A
1,2,4-Trimethylbenzene[a]	———	0	———	———	———	———	———	———	———	———	———
1,3,5-Trimethylbenzene[a]	———	0	———	———	———	———	———	———	———	———	———

Attachment 2 - UCL_{90} Evaluation Form (continued)

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ANALYTE	Transform Data Used (No, Data-Log, SQRI, other)	# Samples	# Samples above MDL	Maximum (ppmv)	Mean (ppmv)	SD (ppmv)	UCL_{90} (ppmv)	PRQL (ppmv)	Transformed PRQL (N/A or Value)	UCL_{90} > PRQL Yes	EPA Code
m-Xylene[b]	NO	41	0	4.89	4.61	0.66	4.74	10	N/A	NO	N/A
p-Xylene[b]	NO	41	0	4.89	4.61	0.66	4.74	10	N/A	NO	N/A
o-Xylene	DATA-LOG	41	0	1.48	1.26	0.12	1.28	10	2.30	NO	N/A
Acetone	DATA-LOG	41	8	3.78	2.46	0.40	2.54	100	4.61	NO	N/A
Butanol	DATA-LOG	41	1	3.70	2.34	0.33	2.41	100	4.61	NO	N/A
Methanol	DATA-LOG	41	3	4.45	2.76	0.45	2.85	100	4.61	NO	N/A
Methyl ethyl ketone	SQRI	41	0	4.71	3.37	0.49	3.47	100	10	NO	N/A
Methyl isobutyl ketone	DATA-LOG	41	0	3.56	2.87	0.26	2.92	100	4.61	NO	N/A
			NO FURTHER ENTRIES COF 14 MAY 03								

[a]These compounds are from the TRAMPAC and are flammable VOCs that do not appear in the QAPjP or the WIPP WAP. These are not part of the target analysis list, but samples may be analyzed for these compounds.
[b]These xylene isomers cannot be resolved by the analytical methods employed in the program. M-xylene and p-xylene will be reported as "Total m-p-Xylene."
[c]Required only for homogenous solids and soil/gravel waste from Los Alamos National Laboratory and Savannah River Site.
[d]Required only for homogenous solids and soil/gravel waste from Oak Ridge National Laboratory and Savannah River Site.

Comments:

N/A COF 14 MAY 03

Attachment 3 Table 2 - Headspace Gas Summary Data

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
2-hydroxy-, ethyl ester propanoic acid	207.91	1	2.44
2methyl-1,3-Dioxolane	24.69	1	2.44
2,4-dimethyl-1,3-Dioxolane	13.50	2	4.88
tert-Butyldimethylsilanol	3.78	1	2.44
hexamethyl-Disiloxane	101.21	2	4.88
octamethyl-Trisiloxane	88.79	2	4.88
Benzyl methyl ketone	1.94	1	2.44
2-methyl-2-Propanol	22.29	3	7.32
2-Trifluoroacetoxydodecane	2.22	1	2.44
Heptanal	1.99	1	2.44
methyl-Cyclohexane	5.12	1	2.44
2-chloro-2methyl-propane	68.63	2	4.88
hexanal	2.85	1	2.44

Data confirms Acceptable Knowledge?	Yes	☒	No	☐

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

N/A

SPM Signature [signature] /Courtland Fesmire Date: 4 June 03

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Attachment 3 Table 2 - Headspace Gas Summary Data

Tentatively Identified Compound	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC	% Detected
(s)-2-Hydroxypropanoic acid	51.98	1	2.44
Trimethyl-Silanol	27.64	2	4.88
1,1,1,3,5,5,5-Heptamethyltrisiloxane	340.95	1	2.44
3-methyl-Pentanal	2.41	1	2.44
hexamethyl-cyclosiloxane	18.69	1	2.44
Trimipramine	12.69	1	2.44
4-methyl-2-pentanol	5.13	1	2.44
1,3,5-Cycloheptatriene	3.35	1	2.44
2-propenyl ester acetic acid	12.06	1	2.44
	NO FURTHER ENTRIES 4 June 03 CF		

Data confirms Acceptable Knowledge?	Yes	☒	No	☐

If no, describe the basis for assigning the EPA Hazardous Waste Codes:

N/A

SPM Signature [signature] COMMAND FESMIRC Date: 4 June 03

Attachment 3 Table 6 – RTR/VE Summary of Prohibited Items and AK Confirmation

Container Number	RTR Prohibited Items[a]	Visual Examination Prohibited Items[a]	AK Confirmation[bc]
There are no prohibited items identifed in this batch			
	No other items DOE 5/4/03		

a. See Batch Data Reports
b. Attachment 10 of CCP-TP-005, *CCP Acceptable Knowledge Documentation*
c. If AK has assigned U134 to this waste stream, then any liquids in these containers are prohibited items (not acceptable by the TSDF).

SPM Signature: _____ Printed Name: Courtland Fosmire Date: 7 May 03

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Attachment 1B - Reconciliation with Data Quality Objectives

SPQAO Sampling Completeness
RTR:
Number of valid samples: 41 Number of total samples analyzed: 41
Percent Complete: 100 (QAO is ≥100%)
NDA:
Number of valid samples: 41 Number of total samples analyzed: 41
Percent Complete: 100 (QAO is ≥100%)
HSG:
Number of valid samples: 41 Number of total samples collected: 41
Percent Complete: 100 (QAO is ≥90%)
Number of valid samples: 41Number of total samples analyzed: 41
Percent Complete: 100 (QAO is ≥90%)
SPAO Signature and Date: 05-08-2003
I certify that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF# NTS54332R0 Lot# 1

	YN/NA	Reconciliation Parameter
1.	Y	Waste Matrix Code.
2.	Y	Waste Material Parameter Weights.
3.	Y	The waste matrix code identified is consistent with the type of sampling and analysis used to characterized the waste.
4.	Y	The TRU activity reported in the BDR's for each container demonstrates with a 95% probability that the container of waste contains TRU radioactive waste.
5.	Y	Potential Flammability. Is there sufficient AK or analytical data to demonstrate that the waste meets that potential flammability limits (Headspace Gas, BDR and Summary Sheet)?
6.	Y	Mean concentrations, upper 90% confidence limit (UCL_{90}) values for the mean concentration, standard deviation, and the number of samples collected for each VOC in the headspace gas of each container were calculated and compared with the program required quantitation limits, as reported in Attachment 2 to CCP-TP-003, and additional EPA Hazardous Waste codes were assigned as required. Samples were randomly collected (when appropriate).
7a.	N/A homogeneous solid not being anlyazed in this waste stream	Mean concentrations, UCL_{90} values for the mean concentration, standard deviation, and the number of samples collected for total VOCs were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary Table 3, and additional EPA Hazardous Waste codes were assigned as required. Samples were randomly collected.

Attachment 1B - Reconciliation with Data Quality Objectives (continued)

7b.	N/A homogeneous solid not being anlyazed in this waste stream	Mean concentrations, upper 90% confidence limit (UCL_{90}) values for the mean concentration, standard deviations, and the number of samples collected for **total SVOCs** were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary Table 4, and additional EPA Hazardous Waste codes were assigned as required. Samples were randomly collected.
7c.	N/A homogeneous solid not being anlyazed in this waste stream	Mean concentrations, upper 90% confidence limit (UCL_{90}) values for the mean concentration, standard deviations, and the number of samples collected for **total metals** were calculated and compared with the program required quantitation limits and regulatory thresholds, as reported in the Characterization Information Summary Table 5, and additional EPA Hazardous Waste codes were assigned as required. Samples were randomly collected.
8.	Y	The data demonstrates whether the waste stream exhibits are toxicity characteristic under 40 CFR 261, Subpart C.
9	Y	Waste stream can be classified as hazardous or nonhazardous at the 90-percent confidence level.
10.	Y (first 50 VE are complete data currently under review)	Sufficient number of waste containers have been visually examined to determine the UCL_{90} for the miscertification rate is less than 14%.
11.	Y (all drums in this lot were analyzed prior to change in the DAC criteria	Appropriate packaging configuration and Drum Age Criteria (DAC) is applied and documented in the headspace gas sampling documentation, and the drum age met prior to sampling.
12.	Y (no TICs were greater than 25% of the waste stream)	TICs were appropriately identified and reported in accordance with the requirements of Section B3-1 of the QAPjP.
13.	Y (nothing identified above PRQLs)	The PRQLs for headspace gas VOCs were met for all analyses as evidenced by the analytical batch data report.
		The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste steam of waste stream lot.

	Completeness	Comparability	Representativeness
Radiography	Y	Y	Y

Attachment 1B - Reconciliation with Data Quality Objectives (continued)

		Headspace Gas Sampling And Analysis	N/A (Online system in use at NTS)	N/A (Online system in use at NTS)	N/A (Online system in use at NTS)
		Headspace Gas Analysis	Y	Y	Y
14.		Solids Sampling	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream
		Total VOCs	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream
		Total SVOCs	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream
		Total Metals	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream	N/A homogeneous solid not being anlyazed in this waste stream

Signature of Site Project Manager | Courtland Fesmire (Printed Name) | 8 May 03 (Date)